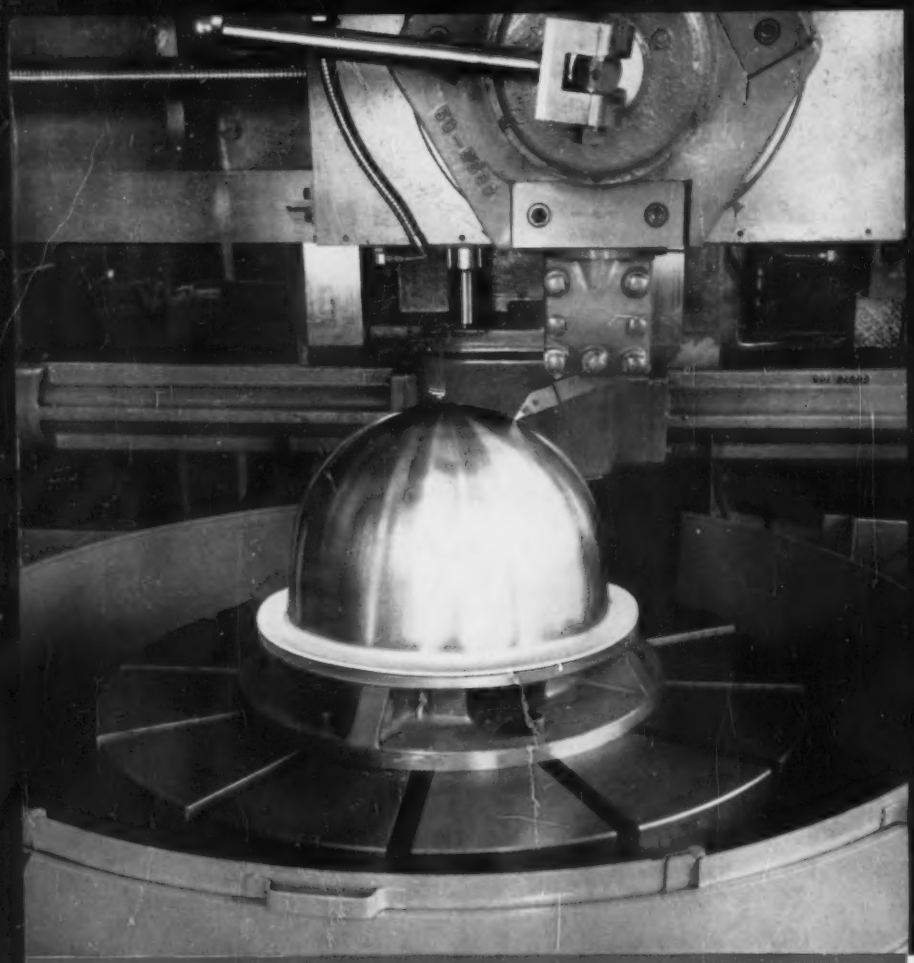
The IRON AGE
September 4, 1958 A Chilton Publication The National Metalworking Weekly

How Russia's GROWING STEEL INDUSTRY Will Affect The Free World

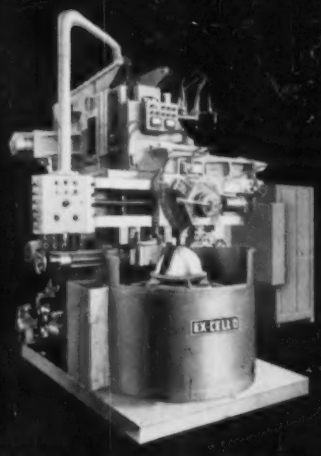
An Iron Age Special Report From Russia – P. 89



XLO

EX-CELL-O FOR PRECISION

LEFT: Single tracer-controlled tool contours aluminum forging to .080" wall thickness holding .001" tolerance inside and outside.



ABOVE: Compact Vertical Contouring Machine handles medium or large workpieces. Slim cabinet at right side holds electronic tracer controls.

Critical Contour Tolerances?

HOLDS WITHIN .001" OF TRUE CONTOUR—INSIDE AND OUT

Close-up shows Style 416 contouring the inside surface. Workpiece is held in a vacuum fixture mounted on the machine table.

58-7

Contouring within .001" of true contour—inside and out—*without waste* requires the kind of precision built into an Ex-Cell-O Style 416 Vertical Contouring Machine.

The aluminum forging illustrated was first contoured on its periphery with a single electronic-tracer-controlled tool, then precision-finished inside to .080" wall thickness.

Designed for contouring hemispherical or irregularly-shaped surfaces, Ex-Cell-O Style 416 Machines also face, bore, turn, groove and chamfer with automatic cycling between loading and unloading.

Call your local Ex-Cell-O Representative, or write directly to Ex-Cell-O for information on other Precision Vertical Boring Machines.

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Machinery Division

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

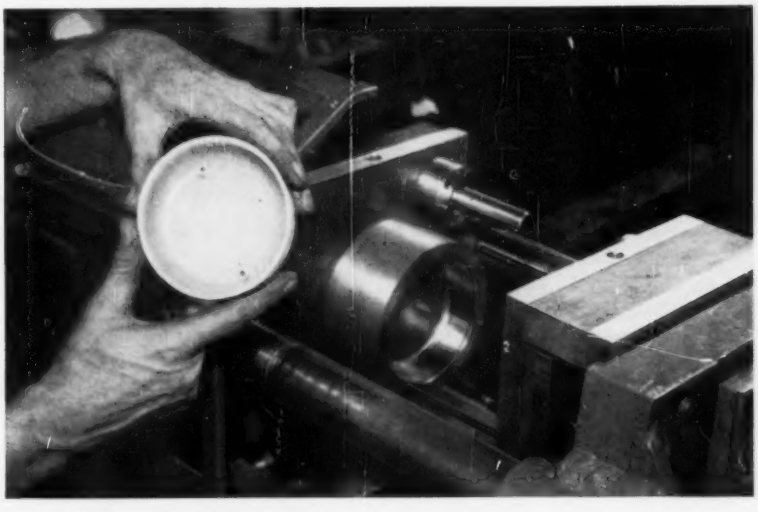
Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Lustre-Die held costs down in molding plastic covers



"We need," said the customer, "a plastic cover to protect our sealed motors. It's to be drip-proof and sturdy, yet must be a low cost item. Do you have a grade of die steel which will help us produce such a cover economically?"

The mold maker, Dollins Tool & Gage Co., Independence, Mo., put the problem up to Ford Steel Co., St. Louis, our local tool steel distributor. Quick as a flash came their recommendation: "Lustre-Die!"

The electric-furnace steel performed to everyone's satisfaction. It was economical. It took a high polish. It had high compressive strength. It machined easily. It performed well in molding the parts which were held to a close tolerance of .001 in.

Lustre-Die is just the ticket for molding plasties because its properties make possible a bright, mirror-like polish. Lustre-Die has the proper basic analysis for molding plasties. And it offers something more — alloy fortification! Lustre-Die is heat-treated by oil-quenching and tempering to augment its properties, and is furnished ready for machining and polishing.

Lustre-Die is carefully inspected to insure cleanliness. It is free from injurious porosity or surface pitting. And there's no problem about inclusion-causing additions.

Lustre-Die is a good steel to keep in mind for your next plastic-molding operation. Your Bethlehem tool steel distributor can furnish it from stock. Why not give him a call?

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Here's Why Air-Hardening Steels are Good Performers

When a large group of various types of tools made from air-hardening tool steels is compared with a group of similar tools made from steels which require liquid quenching for hardening, it will be found that the air-hardened tools outperform the liquid-quenched tools in service. This result will not necessarily be found in the comparison of individual tools, but will appear if a large enough variety and number of tools are studied.

The reason why air-hardened tools outperform liquid-quenched tools can be summed up in one word — consistency. The consistent performance of air-hardened tools is evident in many ways:

DIMENSIONAL STABILITY

All tools, when subjected to the hardening operation, develop small but measurable dimensional changes (so-called distortion). Air-hardened tools not only show less dimensional change than liquid-quenched tools, but the changes that do occur are remarkably similar in each tool when identical tools are made up. By contrast, liquid-hardened tools show considerably more variation from tool to tool when identical tools are produced.

HARDNESS

Duplicate air-hardened tools invariably show the same hardness after heat-treatment. Liquid-quenched tools may show erratic hardness in various locations on a tool, due to variations in effectiveness of the liquid quench; however, duplicate tools will each have a somewhat different hardness pattern.

RESIDUAL QUENCHING STRESSES

All tools develop residual internal stresses due to the hardening operation. Liquid-quenched tools develop high internal residual stresses because of the variations in cooling rate which occur in different locations on a tool during the quench. If improperly controlled, these stresses can lead to cracking of the tools in heat-treatment or in grinding, or the load-carrying ability of the tools may be low and erratic.

By contrast, air-hardened tools develop only a low degree of internal stress during hardening, because of the comparatively uniform cooling in the quench. Furthermore, the degree of internal stress which develops is uniform from tool to tool, so that the service performance of duplicate tools is reasonably consistent.

The advantages of air-hardening steels cannot be realized, however, unless they are hardened by air-quenching. It is possible to harden all air-hardening steels by liquid-quenching (oil-quench or salt-quench as in martempering) and this is frequently done because of the convenience of existing heat-treatment equipment. However, liquid-quenching of air-hardening steels is a serious mistake, because it sacrifices almost all the basic advantages of air-hardening steels. Liquid-quenching not only increases distortion and internal stresses, but may lead to cracking of some of the tools during heat-treatment. Air-hardened steels which are properly quenched in air do not crack in heat-treatment.

Bethlehem offers a full range of air-hardening steels: Bearcat for shock applications, A-H5 for general-purpose tool and die work, and Lehigh H for maximum production runs.

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The IRON AGE

September 4, 1958—Vol. 182, No. 10

Digest of the Week in

*Starred items are digested at right.

NEWS ARTICLES

APPLIANCES

Really an Upturn — Sparked by some new developments in marketing, the appliance industry is making a comeback. Fewer lines, economies in manufacturing, but with larger sales, have appliance makers on the side of the optimists. P. 39

GM MANAGEMENT

New Leaders — Retirement of GM's top leaders brings a new look to GM's management. Chairman Donner is a financial man. President Gordon an engineer and manufacturer. P. 42

EXECUTIVE PAY

In Light Manufacturing—In this broad category, the chief executive officer has a sizable bulge over the all-industry average for comparable size companies. But raises have been fewer in this group. P. 43

EXECUTIVE MANHUNT

Still Underway — Despite recession the search for top management

Metalworking

RUSSIAN REPORT: E. L. Ryerson, left, chief of U. S. iron and steel delegation to USSR, and Republic's Earle Smith, right, with Russian steelmaker at a Siberian mill on recent tour which is basis for report on Russia. P. 89

talent continues. Recruiters say marketing and financial men are now in biggest demand. P. 46

RED EXPORT LIST

Coming Soon—In a matter of six to eight weeks the revised list of products permitted for export to Communist countries will be issued by the Commerce Dept. P. 61

FEATURE ARTICLE

REPORT FROM RUSSIA

Steel Is King—Assigned top priority, Russian steel production has more than tripled in the past 10 years. It's a growing factor in the war on the economic front. Special report from inside Russia reveals weaknesses and strongpoints of the Russian steel industry. P. 89

Largest "Steel Corp."—It's a relatively young "company" but it has new management, huge reserves, good research. Because of the location of raw materials, steel expansion is heading eastward. Even so, most of recent new capacity increases have come from the older steelmaking areas of the west. P. 93

Technology Is Good — Production of blast furnaces is often 30 to 40 pct higher than American furnaces of comparable size. Likewise tap-to-tap time for Soviet openhearths is about 25 pct less than standard U. S. practice. These and other improvements in steelmaking are the result of intensive research and development. P. 95

Plan Big Expansion—The short range target is to increase output from an expected 59 million net tons this year to 70 million tons in 1960. The 1975 target is 125 million net tons. Most of the expansion will be based on conventional equipment. Serious roadblocks are an overloaded rail network and poor quality of coal and iron ore. P. 98

The Soviet Steelworker — Well fed, ill housed, he drives hard on the job. He works a 40-hour week, gets incentive pay if his team makes the quota, and a further bonus if it's exceeded. His religion is Communism. P. 101

MARKETS & PRICES

STAINLESS STEEL

It's a Tonnage Market — New, high-speed mills are giving stainless producers plenty of capacity. But, with shipments lingering below 1955's peak levels, sales drives are getting major attention. P. 44

BORING MILLS

Higher and Higher — Bigger workpieces to be machined bring on trend to higher vertical boring mills. B-L-H reaches for the ceiling with new units. And sales are up despite recession. P. 48

AUTOMOBILE BUYERS

They're More Conservative—Sales of family-type sedans are gaining over sports models. The industry hasn't decided yet if the reversal in trend is permanent or just a recession condition. P. 56

STEEL UPTURN

Well Under Way—Mill order books are in best shape since the down-trend began last year. Auto strike threat injects a note of uncertainty into the market. P. 117

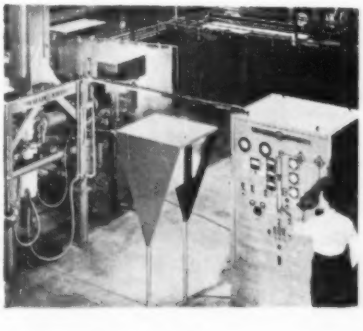
VALVE PRICES

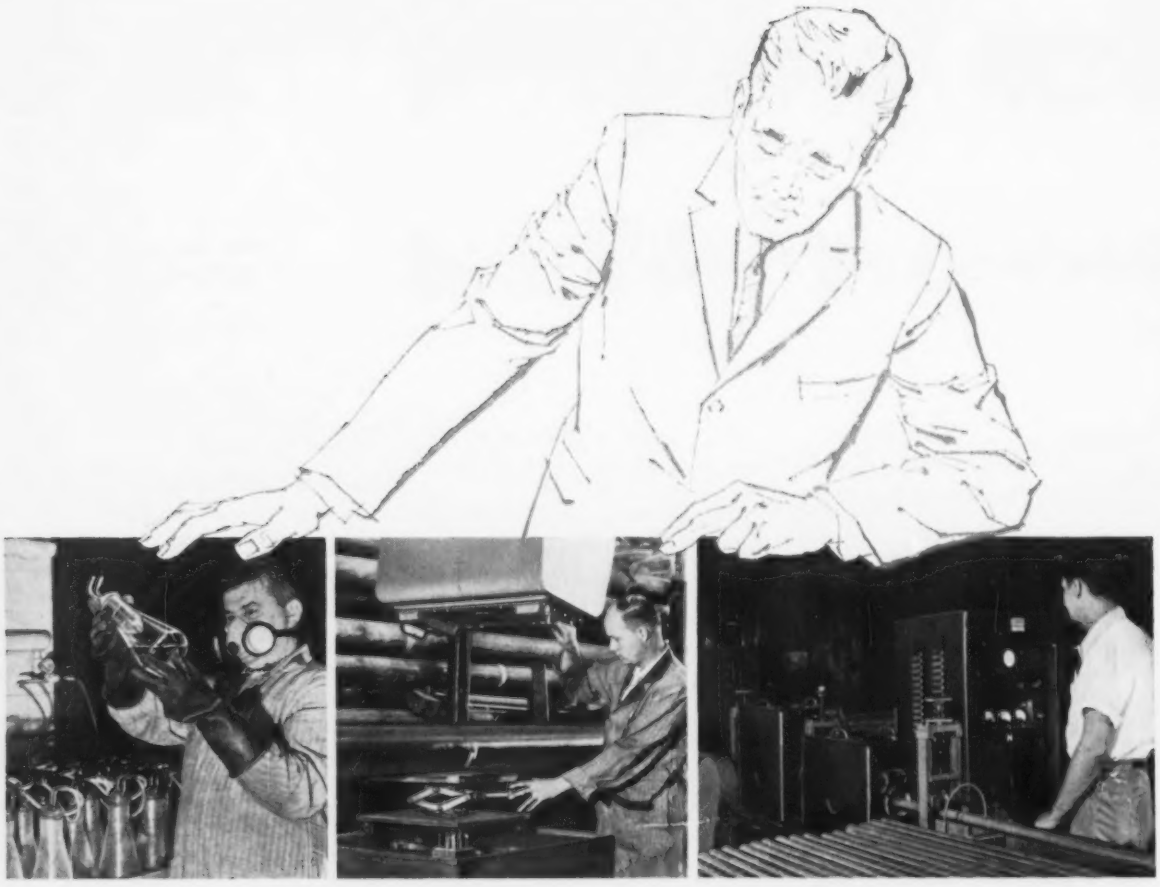
Holding the Line — Increased steel costs are having little effect on valve prices. Competition is tough between valve makers and discounting is widespread. But the picture could change by Jan. 1. P. 118

NEXT WEEK

VACUUM MELTING

Probe Key Variables — A test program is revealing new facts on consumable arc remelting under vacuum. The report of systematic research on many variables in the process is one of several features in next week's Steel Show Issue.





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From raw materials to finished tube, quality depends upon control and "know-how." And when it comes to matching the one right tube, of the hundreds of possibilities, for a particular end use application, it takes specialized equipment and experienced technicians.

For instance: If corrosion is a problem — will a steel with a particular heat treatment do the job? If the tube is unusually long and center welding is employed to achieve length — is the joint completely satisfactory? If the tube must have a special soundness quality — is it free from hidden or invisible defects?

These are but a few of the quality control checks which insure that the tubes you buy from B&W are as near perfect in terms of performance as it is possible to make them. When you need stainless, carbon or high alloy tubing — for pressure or mechanical applications — you can rely on Mr. Tubes and B&W to supply the best. Write for bulletin TB-420 — The B&W Quality Control Story. The Babcock & Wilcox Co., Tubular Products Division, Beaver Falls, Pa.

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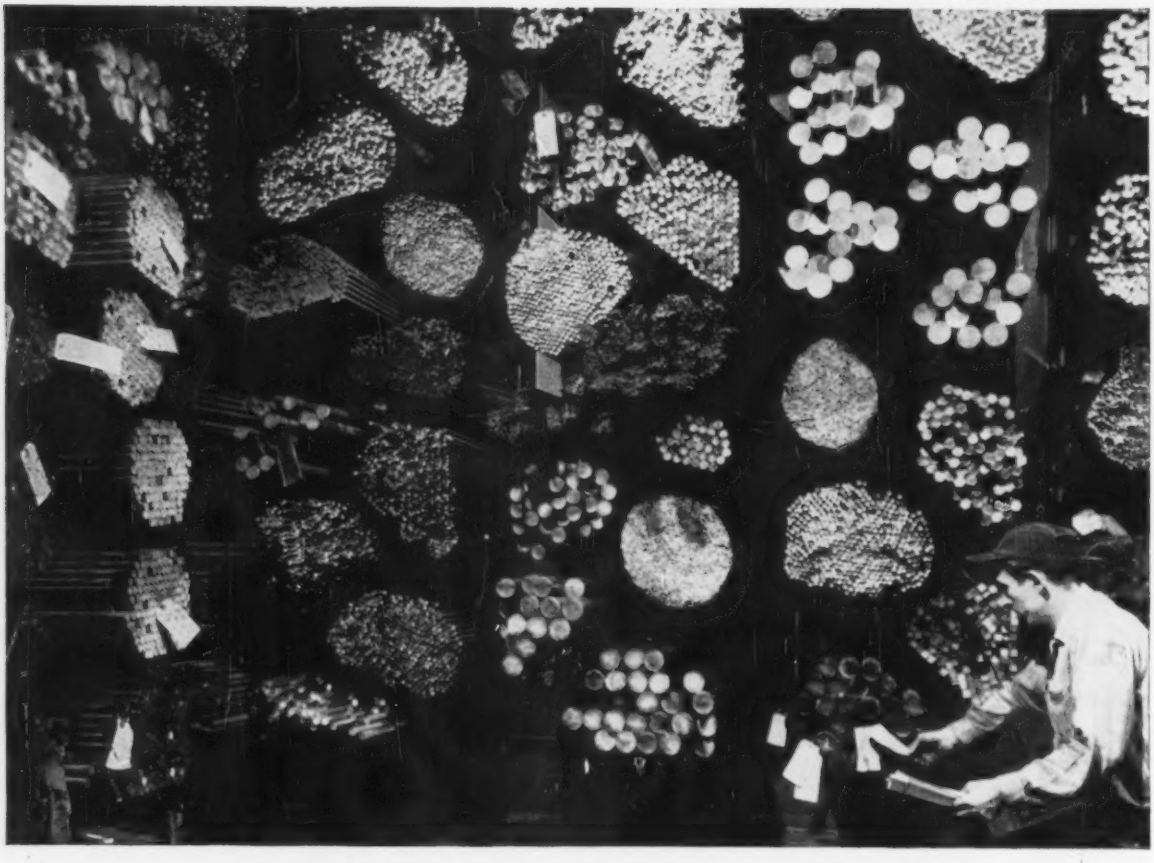

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✓ ***Know-How.*** Every day Ryerson steel men—*specialists* in cold finished bars—are in touch with machining problems . . . latest techniques. This unequaled fund of experience is ready to serve you in selecting a steel that gives faster machining to closer tolerances . . . better finish.

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Crystal Ball Recheck Or—Post Labor Day Musings

Back in April and May our crystal ball had us coming out of the recession, or at least moving off the bottom. We said so then.

Common sense should tell us to let well enough alone. You would think we would "lay low" now and make no new predictions. Not so!

Soon many leading savants will be sending out their dignified and scholarly economic forecasts. We must beat that parade and get our two cents in now. It could be our downfall as a forecaster, but it is almost a compulsion with us.

We are on record for a modest upturn in steel this fall; 60-40 odds on an auto strike; a sharper business pickup next spring; 65-35 odds on a long bitter steel strike next July; and a real solid upturn in metalworking business late next year. How do we feel now?

The modest pickup in steel may be more than modest with a 75 per cent steel operating rate in the fourth quarter. An auto strike will postpone—not kill off—some steel demand.

Tighter credit and the moderate "leaning against the wind" by the Federal Reserve Board will not nip recovery in the bud. It could slow it up, but business will improve steadily between now and early 1960 when past boom levels will be exceeded by a tremendous economic upsurge.

Our scouts on the farm confirm our suspicion that farmers are loaded with more cash than they had a year ago. They will spend more for cars, trucks, implements, homes, repairs, farm equipment and appliances. This will help support the metalworking industry recovery.

Our city spies tell us that more people are getting out of hock. That means they will soon be spending more. Whoever knows how to sell and has a good product will get the business. Paybacks are ahead of credit extensions. That won't last long—in an uptrend.

New plant and equipment trends will not turn upward until next year. What had been estimated as a midyear recovery next year—or possibly in the fall of 1959—will start before midyear and grow in the last six months of 1959. Its impetus: Search for lower costs, replacement of obsolete machinery, and renewal of overall confidence.

The gist of this recheck: The business recovery is underway; it has forward momentum; the spring of 1959 will be much stronger than this fall; and the fall of 1959 will lay the basis for the banner year, 1960.

Better plan now!

Tom Campbell

Editor-in-Chief

Make Certain the BEARINGS you buy are in the MAKERS' SEALED BOXES

And what is so important about a manufacturer's box? Just this; surplus bearings or shelf worn bearings are usually shipped in one large package. Or, if individually wrapped, in plain boxes—often without any identification, usually of ancient "vintage". . . . and bearings do not improve with age.

Bearings from our stocks are always sold just as they arrive from the manufacturer—fresh, fully protected and guaranteed to be first quality by the maker and ourselves.

We are *authorized* distributors for all of the many lines of bearings and accessories we sell. Our engineers can recommend the best bearing for your application.

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Red Trade Policy

Sir—I enjoyed your editorial of Aug. 14 (Red Trade Bauble—More Gimmick Than Real) very much.

I think it is necessary to keep reminding ourselves of the fact that communism is our enemy and that any trade with the communists is going to be something that will help them.

I believe we should even go further than not trading ourselves and demand that our allies refrain from trading also as the price for our financial help.

I'm afraid our State Department is going too far in loosening controls so Britain and some of our other allies can sell machine tools and other equipment to the Reds.—P. G. March, III, The Cincinnati Shaper Co., Cincinnati, O.

Proper Title

Sir—I am sure that you have noticed the growing acceptance of the phrase "steel service center" to describe distributors in the literature and advertising of producers and others in our industry. As a member of the Public Relations Committee of the American Steel Warehouse Association, Inc., I would certainly appreciate your help in entrenching this description in the minds of metal consumers.

The term is gaining wide and rapid recognition in the industry, and it would be greatly appreciated if you would help us to this extent. Using the term in your articles, price tables, and editorials would also be a big boost on the job we are trying to do.—H. T. Gregg, Vice Pres. & Regional Mgr., Metal Goods Corp., Houston, Texas.

▪ We agree that "warehouse" is far from adequate in describing your function. You'll have our help in stressing the services your industry provides and in using the term "steel service centers."—Ed.

Executive House

Sir—In your July 17 issue I read an article about a new building in Chicago—Executive House.

I am very much interested in this kind of construction and I would appreciate receiving the name and address of the design engineer as well as the construction company.—Jaime Ginard, Aceros Ecatepec. S.A., Mexico.

▪ For more detailed information you might contact the architect—Milton M. Schwartz & Assoc., Chicago, Ill. The contractor is C. A. Tharnstrom & Co., Skokie, Ill.—Ed.

Cutting Oil Data

Sir—Please send me additional information about the new bacterial inhibitor for soluble oil mentioned on p. 35 of your Aug. 14 issue.—A. L. Muller, Dist. Purchasing Agent, Aluminum Co. of America.

▪ For further information you may contact Eli Lilly & Co., Indianapolis, Indiana.—Ed.

"Now as I was saying before I was so rudely interrupted."

IBM'S PROBLEM:

Plate many different small parts *without mixing!*

UDYLITE'S ANSWER:

CLUSTER BARRELS... for faster, greater production!

At the International Business Machines Corporation, Electric Typewriter Division plant, at Lexington, Ky., many different small parts had to be plated and processed uniformly . . . without mixing. Conventional methods proved too slow, costly and inaccurate. Then, IBM discussed the problem with Udylite.

Out of this discussion came the Udylite Cluster Barrel—developed specifically for the plating and processing of many different minute parts simultaneously . . . *and doing it without mixing!*

Also, because of the gentle tumbling action of the work in each barrel, IBM is now able to plate tiny, fragile parts that heretofore had to be racked, thus saving thousands of dollars each year.

And, the excellent agitation of the solution that results from the orbit struck by each barrel, plus the definite replenishing of the solution makes the Udylite Cluster Barrel the ideal answer for such a problem.

In addition to the multiple cluster illustrated, Udylite now offers 12, 8 and 4 barrel units for plating any number of small and medium sized parts. These cluster combinations are indispensable for anyone engaged in the production plating or processing of business machines, radios, electrical and electronic items.

If processing of small batches or volume plating *without mixing* is a problem in your shop contact your local Udylite salesman now. He can show you how Udylite Cluster Barrels can be *your* answer, too! Call him today or write direct to:

the udylite corporation

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A Tourist in Russia

The report from Russia beginning on p. 89 is a serious effort to show what the Soviet steel industry is like and where it is heading. It is based on the May 21-June 21 visit to the Soviet Union by 19 representatives of the steel and iron mining industry of the United States.

Even with most of its efforts directed to the business at hand, there were bound to be some lighter moments on the trip. It is our pleasure to recount a few from a talk with editor Sullivan, who was a member of the delegation.

Maybe They Did—"If the Russians were to claim that they invented hospitality, few members of the U. S. group would be inclined to deny it. They have an enormous desire to please their guests.

"Everywhere we went there were receptions with special fruits flown from the South for us, plus the usual smoked sturgeon, pickled fish, jellied crab, beef and caviar. I am not fond of caviar and buttermilk for breakfast but some of the delegates liked it very much.

By All Means, Do—"If they ask you to eat or drink something, it's a good idea to accept. Otherwise their feelings are hurt, they think they are not being hospitable. Contrary to popular opinion, it need not be done to excess. You can skip the caviar at breakfast—chances are no one will be watching.

"And if you happen to find yourself in Moscow or Leningrad, by all means plan to visit the subway. You'll be taken there whether you plan it or not. And you'll be surprised because both are every bit as clean and fancy as they're cracked up to be.

Study in Contrasts—"We flew some 3000 miles in the TU-104 jet. The Czech airline version uses five seats across to carry 75, as in U. S. tourist flights, but our Russian planes were 50-passenger jobs. It may seem anachronistic to see brass-colored wall escutcheons and baggage racks not to mention light fixtures of the sort the Pullman Co. installed here at about the time Dewey took Manila.

"But when you're flying along smoothly at 550 to 600 mph these things don't concern you any more than the pretty china statues in glass cases on the walls of the jet. You just wonder.

"In contrast to the jet plane trips was one of 300 miles by train on the Trans-Siberian RR which took 14 hours."

LARGEST HOTEL in Europe is Muscovites' claim for Hotel Ukraine, background, Moscow headquarters for U. S. delegation. In group, l to r: F. M. Rich, Inland Steel; F. S. Eckhardt, Bethlehem; M. O. Holowaty, Inland; N. B. Melcher, U. S. Bureau of Mines; and J. B. Austin, U. S. Steel.

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Train maker cuts assembly costs 37% with one-piece Tinnerman **SPEED CLIPS®**

On Lionel electric trains, one-piece Tinnerman SPEED CLIPS fasten car trucks to car bodies... cut assembly costs 37%. Each SPEED CLIP replaces a grooved screw-machine part and a special retainer ring. Also eliminated are riveting and crimping operations.

Specially engineered for Lionel, this SPEED CLIP is easily snapped through punched holes. Spring steel fingers compress, then spring apart to complete the truck-to-body attachment.

Perhaps your product can be assembled faster, better, at lower cost by a switch to Tinnerman SPEED NUT brand fasteners. Your Tinnerman sales engineer can make on-the-spot fastening recommendations. Or he can arrange for a complete no-obligation Tinnerman Fastening Analysis of your product. He's listed in the Yellow Pages under "Fasteners." Or write to:

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CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bundy GmbH, Heidelberg.

COMING EXHIBITS

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Iron & Steel Show—Sept. 23-26, Cleveland Public Auditorium, Cleveland. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22, Pa.)

Western Tool Show — Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metal Show — Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

SEPTEMBER

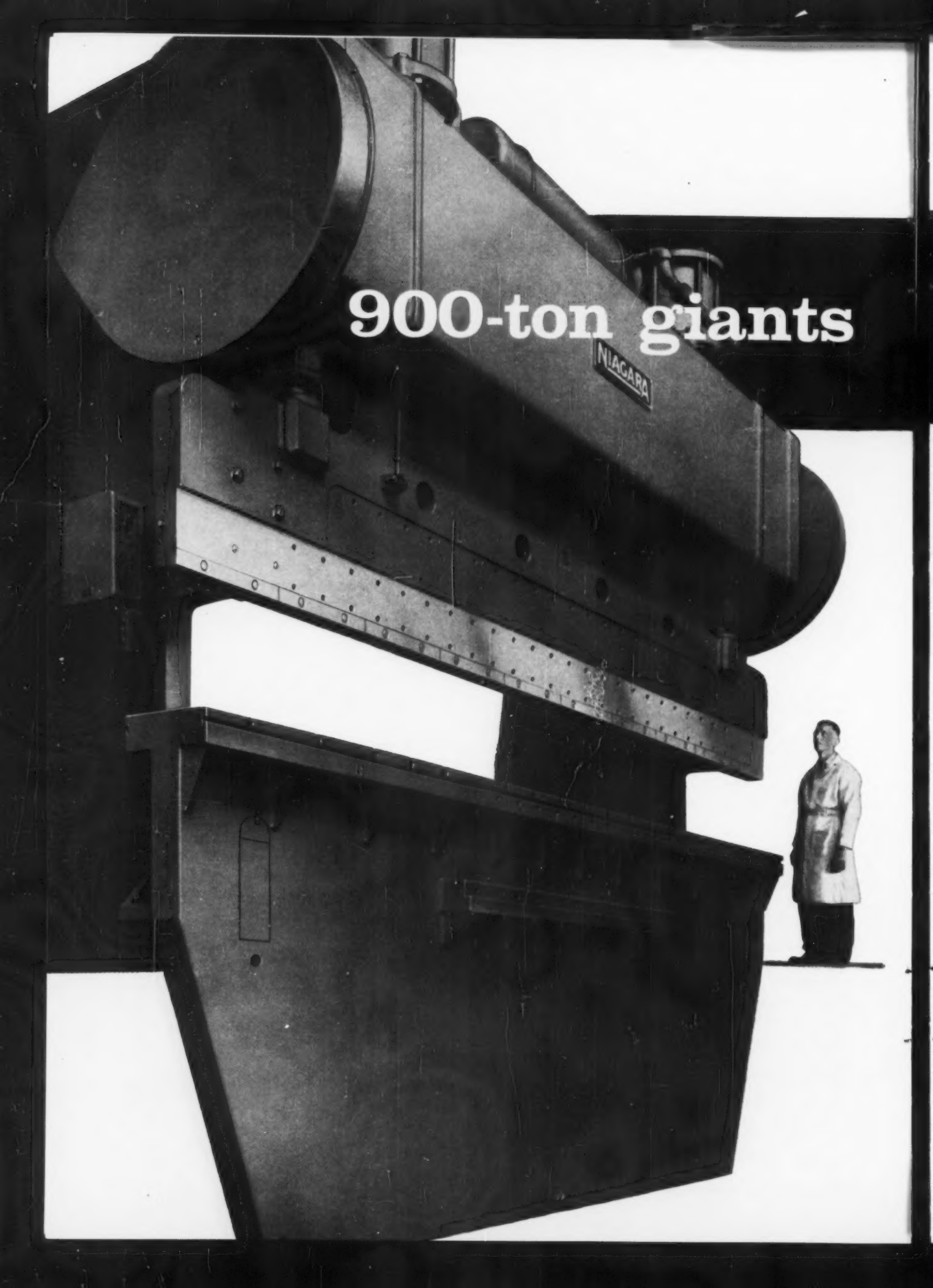
National Petroleum Assn.—Annual meeting, Sept. 10-12, Hotel Traymore, Atlantic City, N. J. Society headquarters, Munsey Bldg., Rm. 958, Washington, D. C.

The Malleable Founders Society—Semi-annual meeting, Sept. 19, Hotel Cleveland, Cleveland. Society headquarters, 1800 Union Commerce Bldg., Cleveland 14.

Steel Founder's Society of America—Fall meeting, Sept. 22-23, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland 13.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

(Continued on P. 16)


900-ton giants
NIAGARA

to 15-ton work-horses

AMERICA'S MOST MODERN LINE OF PRESS BRAKES OFFERS YOU THE MOST

Take your pick! 76 standard models! Niagara offers you any press brake you need . . . and the most modern features in whichever one you choose. Like its complete, companion line of power squaring shears, the Niagara line of press brakes is America's most advanced in engineering and performance.

Collectively, Niagara Press Brakes embody an unequalled array of features to boost production, simplify operation, improve quality and cut costs:

- **Power clutch** — electro pneumatic friction, low inertia, no adjustments needed.
- **Power brake** — spring applied, air released, synchronized with clutch.
- **Power treadle** — new ease of command, no operator fatigue.
- **Ram micro-jogs smoothly, softly** to a layout line — even through work at full capacity . . . stops on a dime.
- **Press type electric controls** — for greater safety.
- **Wrap around crown** — modern, clean sweep styling.
- **Adjustable clutch torque capacity** controlled by varying air pressure to protect machine and dies against overload.
- **Heat treated and hardened steel gearing** operate in bath of oil — no open gearing.
- **Laminated non-metallic ways** — minimize wear, prevent scoring.
- **Anti-friction bearings** throughout intermediate and high speed shafts.
- **Front operated adjustable speed drives** and two-speed transmissions.
- **New, heavy duty, front operated back gages** — power or manual.
- **Self-locking power ram adjustment** with positive stops against overtravel. Direct reading counter type indicators.
- **Heat treated alloy adjusting screws** with ball joints and replaceable seats.
- **Centralized pressure lubrication** delivers oil to all main bearings, connection bearings and gibs.

Make a complete check of all the Niagara features that pay big dividends in press brake performance. Write for illustrated Bulletins 89 and 90 containing complete details and specifications on this great line of press brakes (bending capacities from 16 ga. to 1" and bed lengths from 4' to 30').

NIAGARA press brakes

NIAGARA MACHINE & TOOL WORKS, BUFFALO 11, N.Y.

DISTRICT OFFICES: Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia

Distributors in principal U. S. cities and major foreign countries

America's most complete line of presses, press brakes, shears, other machines and tools for plate and sheet metal work.

EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute — Annual meeting, Sept. 25-27, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.—Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute — Annual meeting, Sept. 28-Oct. 2, The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

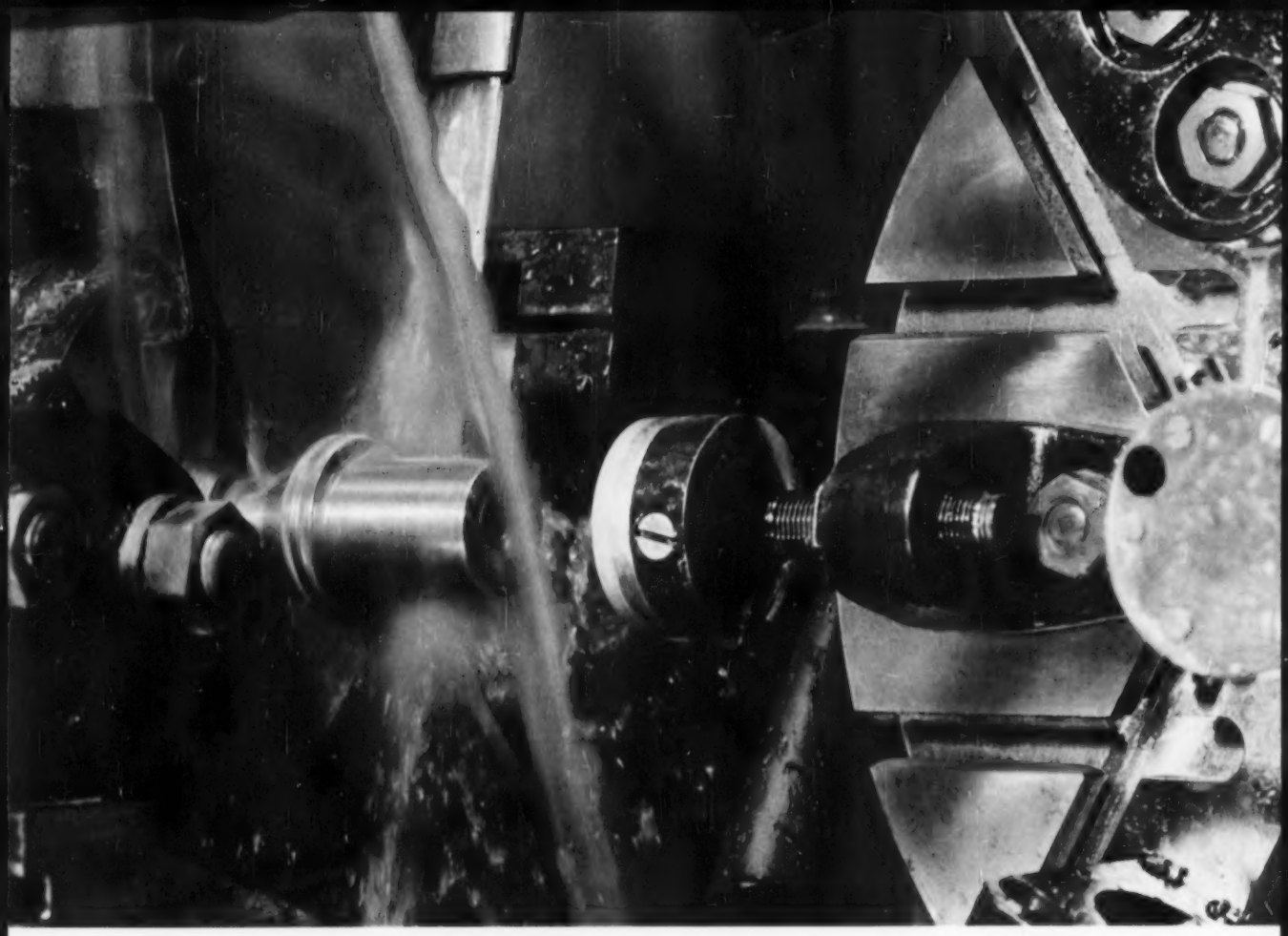
Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago, Society headquarters, 38 S. Dearborn St., Chicago.



Now–Bethlehem Leaded Bars

improved machinability

faster cutting speeds

longer tool life

smoother machine finishes

If you're doing automatic machining, you can start right now to get higher production and profits with Bethlehem leaded carbon and alloy steel bars.

Adding controlled amounts of lead to Bethlehem bars does not change mechanical characteristics of the grade of steel. To make sure that lead is distributed uniformly throughout the steel, we follow the most careful procedures in production. Next comes a series of quality inspections, to be sure that every bar is uniform. That's why you can count on the improved machinability of Bethlehem leaded bars—whether you're using leaded carbon or alloy bars.

Your nearest independent "steel service center" or non-integrated cold drawer will give you further information on Bethlehem's leaded carbon or alloy bars. Or, if you prefer, get in touch with us; one of our engineers will gladly discuss these free-machining steels with you. Just call or drop a line to Bethlehem Steel Company, Bethlehem, Pa.

Bethlehem engineers will help you with your steel-working problems

BETHLEHEM STEEL

Jumbo stein of glass and steel

When a brewer needs a large non-contaminating storage tank for his beer, chances are he'll insist on a rugged, glassed-steel tank such as those made by The Pfaudler Co., a division of Pfaudler Permutit Inc., Rochester, N. Y., makers of steel-and-glass equipment for process industries.

Here you see a typical glassed-steel tank emerging from the furnace treatment which fuses glass to steel. The shell of this tank was welded from carbon steel plates and flanged and dished heads furnished by Bethlehem, to back up the glass lining with the matchless strength of steel.

The uniform quality of Bethlehem plates, together with good welding technique, assures sound welds on a wide range of applications. Bethlehem plates are available in the full range of sheared and universal-mill sizes. Our sales engineers are available, too—for whatever assistance you may need. Just call our nearest office, or write direct to Bethlehem, Pa.

Automobile wheel rims–a torture test for sheet steel

An automobile wheel is dramatic proof of the strength of sheet steel. But despite the hard beating that wheels must take year after year, the sheet steel endures even more severe torture in the making of wheels. For example in the forming of rims (right), strength in the sheet must blend with ductility while the rim is spun to the complex contour required. This is perhaps one of the severest of all tests imposed on steel sheets.

Only top-quality sheets will take that kind of punishment with uniform success.

Bethlehem sheets are being formed into millions of rugged wheels for leading makes of automobiles. In any sheet metal or stamping operation, you can depend on Bethlehem steel sheets for reliable performance. Bethlehem sheets are as finely finished, as easy forming, as true to gage as any on the market. If you use sheets, perhaps we can help you turn a problem into a profit. Bethlehem Steel Company, Bethlehem, Pa.

Bethlehem engineers will help you with your steel-working problems

BETHLEHEM STEEL

Die of Bethlehem tool steel produces tricky floor-plate section

This 800-ton press blanks and forms 11-ga sheet steel into square floor plates containing lugs on sides and bottom for gripping the concrete sub-floor. Pieces are produced at the rate of 3,000 in a typical 8-hour shift.

The large blanking-and-forming die used here is made of Bethlehem's Lehigh H tool steel . . . a high-carbon, high-chromium, air-hardening grade that's easy to machine and heat-treat. You can count on it for long production runs because it has very high wear resistance. In this application up to 50,000 pieces can be turned out between dressings.

Bethlehem makes a full range of tool steels to meet practically every production need. Your tool steel distributor can give you fast delivery . . . and he can help you select the right Bethlehem tool steel for every job. In addition, our engineers are at your service.

Bethlehem Steels and Specialties

Here is a partial list of steels and specialty products in the Bethlehem line:

BARS AND BILLETS
Carbon and Alloy AISI Grades
Leaded
Special Rolled Sections

TOOL STEELS FOR EVERY JOB

FORGINGS: Drop, Press, Hammer, and Upsetter
Rolled-and-Forged Circular Products

SHEETS: Hot- and Cold-Rolled
Continuously Galvanized

PLATES: Sheared and Universal

ROD AND WIRE: General and Special-Purpose grades
Fine and Shaped Wire

WIRE ROPE AND SLINGS

FASTENERS: Standard Bolts, Cap Screws, Rivets
Special Fasteners

PIPE AND TUBES: Butt-Weld
Electric-Resistance-Weld

STRUCTURAL SHAPES

COLD-FORMED SHAPES

PALLET RACKS

WELDMENTS: Frames, Tanks

RAILS: Tee, Crane, Girder

CASTINGS: Carbon, Alloy, and Stainless Steel
Grey Iron; Brass and Bronze

M2

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL CO., BETHLEHEM, PA.

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Folder 664

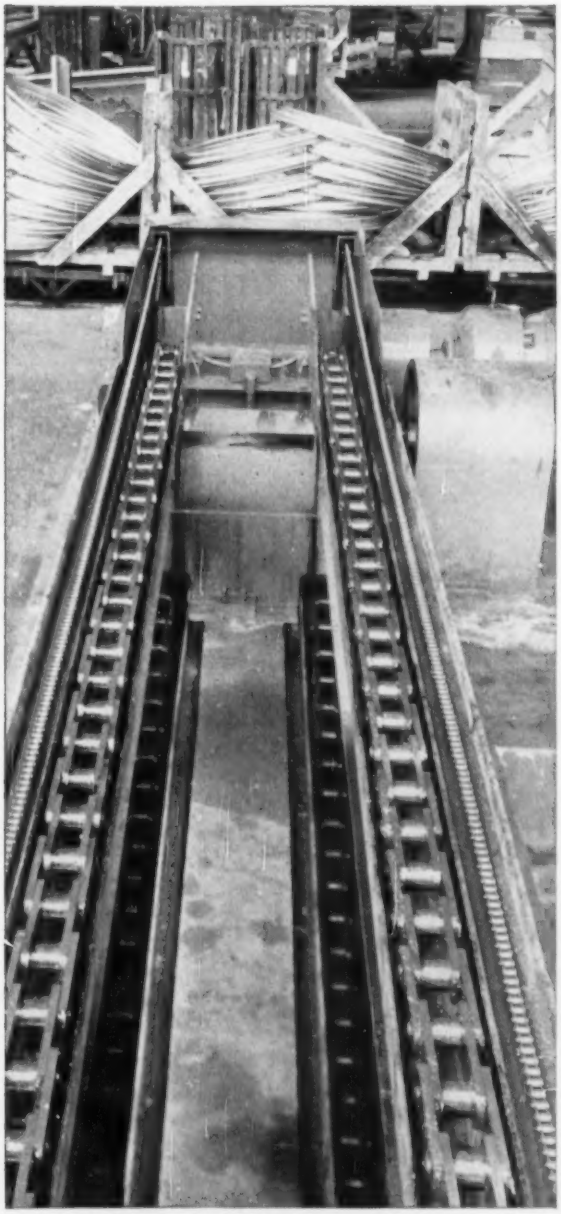
589. Printed in U.S.A.

Bethlehem Steel Company, Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Link-Belt draw bench chains hold accurate pitch and sprocket contact



LINK-BELT 6-IN. PITCH SS-1326 CHAIN operates at speeds up to 400 feet per minute. Note strands of Link-Belt RC-80 roller chain which serve to return the gripper head back to the die stand so that another draw can be made.

Double strand SS-1326 bushed chain accommodates high operating speeds

This bushed type chain draws from one to five 130-ft. tubes at speeds up to 400 feet per minute on this 36,000-lb. draw bench. Design and structural features of Link-Belt SS class bushed chain make such high speeds possible.

Bushings perform operational function

Chain bushings play a major role in the operation of dual-chain draw benches. They engage a pair of pivoted hooks connected to the gripper head. The chain then pulls the gripper head and tubes through the die stand. When the draw is completed, the hooks are cammed away from the chain and the chain continues to operate.

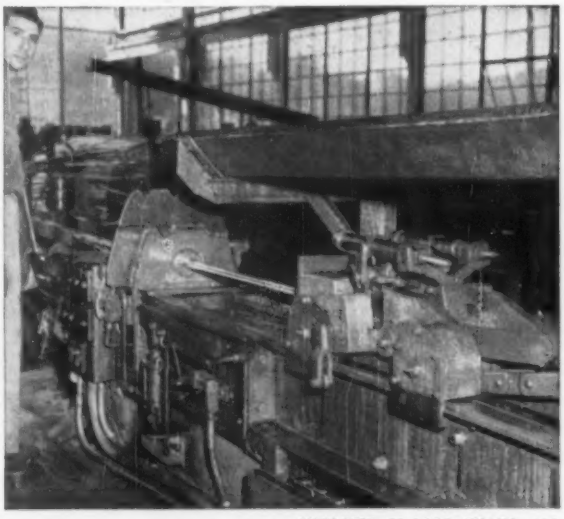
Structural advantages of bushed chain

Link-Belt SS class chain also offers rugged construction. The hardened steel bushings, securely fitted and locked in sidebars, give a durability and strength that permit even higher operating speeds than are possible with standard block chain.

Special machining of parts extends life of this draw bench chain

Whether it's for a 5000- or a 100,000-lb. bench, Link-Belt draw bench chains are built to last. Parts are accurately machined after hardening by a special process that assures longer chain life on even the highest chain pull applications.

SS class draw bench chains are available in a variety of pitches and strengths to suit any requirement. They are of all-steel construction, and well balanced. They are furnished in either bushed type or block link design. Close pitch control and correct sprocket contacting surfaces are maintained at all times.



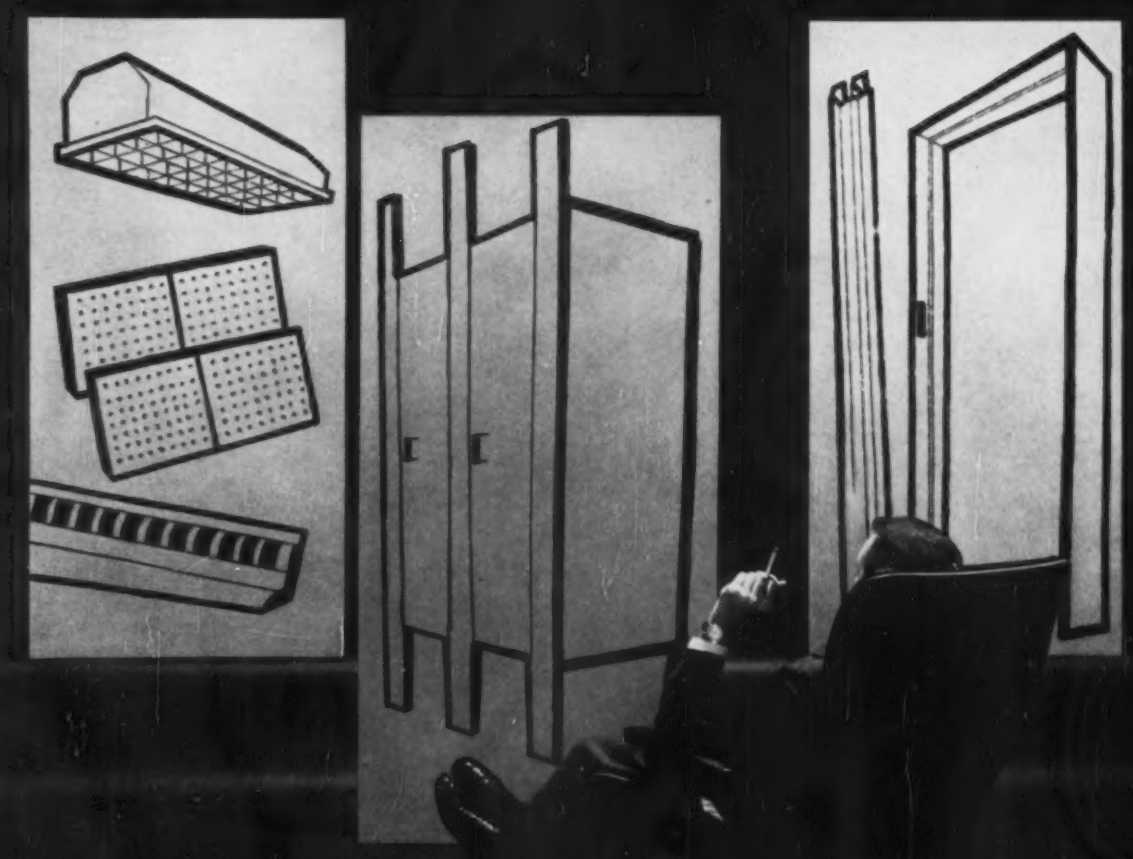
LINK-BELT SS-1325 CHAIN, 130 ft. long, is used on each of four draw benches in this copper tubing redrawing plant. Accurate control of raw materials and manufacturing processes is your assurance of close pitch and correct sprocket contact.

HEADQUARTERS for chains, sprockets and other Link-Belt conveying and mechanical power transmission products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,859



THE EASY WAY TO PREVENT CORROSION IN YOUR PRODUCT? SPECIFY ZINC-COATED STEEL SHEETS, OF COURSE!

There's just nothing like zinc-coated steel sheets for enduring, economical corrosion prevention in the products you manufacture such as light troffers, metal ceiling tiles, baseboard heating units, sliding door hardware and scores of other products.

Take the formability of such sheets, for instance. With either electrolytic or continuous process zinc-coated steel, the tight coating can take the severest fabrication operations and never flake or peel. Result: permanent corrosion resistance for longer life and lasting beauty. First cost: low. Maintenance costs: nil.

How about paintability? Electrolytically zinc-coated steel sheets, chemically treated, are unexcelled for painted products. Paint digs in and holds its unbroken smoothness and beauty for keeps.

In electrolytic zinc-coated steel, the name that stands out is Weirzin. In continuous process zinc-coated steel sheets, it's Weirkote. Let us show you how Weirzin or Weirkote—or both—can help you meet your manufacturing requirements better.

Write for free informative brochure on each today. Weirton Steel Company, Dept. A-2, Weirton, W. Va.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Stanscrew service prevents problem for manufacturer of journal bearings

The wise manufacturer eliminates any possibility of fastener breakage *before* it can become a serious and expensive field problem.

As a prime example, a leading manufacturer of sealed cartridge journal bearings was concerned about the cap screws used to hold one essential part—the thrust cap—in place. They knew the lateral movements of a railroad car resulted in thrust on this cap, imposing extremely heavy loads on these fasteners.

A call to their industrial distributor soon had a Stanscrew fastener specialist on the job. He recommended continued use of a torque wrench and worked out the proper setting so that each fastener carried its rated load. Subsequent laboratory tests proved these recommended torque settings insured against fastener breakage.

The manufacturer accepted these recommendations . . . and thus eliminated a potentially serious problem before it could develop. The torque settings and technique developed by the Stanscrew representative have been incorporated in the company's instruction and maintenance manual to insure proper maintenance procedures.

Technical assistance like this is just one of the many reasons more and more manufacturers are standardizing on Stanscrew. Trained specialists, backed by an outstanding engineering staff, can solve your particular fastener problem. In addition to assuring the dependability of your product, often they can save you money . . . for example by substituting a standard fastener for a costly "special".

Call your Stanscrew distributor today for the answers to your fastener problems. He will see that the Stanscrew Fastener Specialist visits you without delay.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

In Gemco Power Mowers,

REPUBLIC NYLOK FASTENERS SAFEGUARD PERFORMANCE SPECIFICATIONS

REPUBLIC NYLOK FASTENERS are used extensively on Gemco Rotary, Reel, and Riding Power Lawn Mowers. Photograph above shows blade assembly securely locked to engine shaft with Nylok Cap Screw. An added advantage of Republic Nylok Bolts and Cap Screws for some applications is their ability to seal against fluid escape when wrenched tight. As shown in sketch above, Nylon pellet in bolt body blocks flow of fluid along helical thread path.

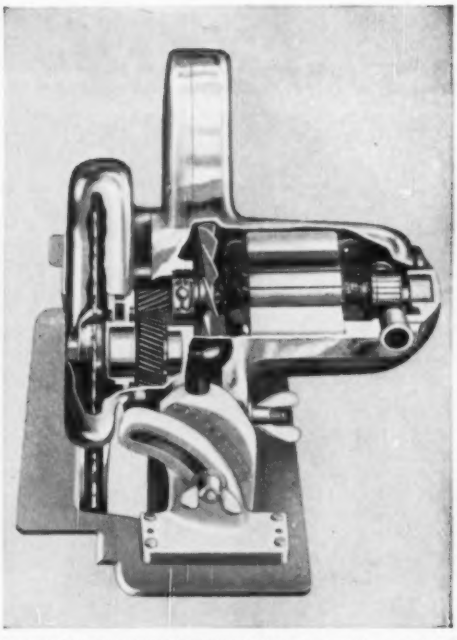
Modern Gemco Power Mowers, manufactured for General Mower Corporation, Buffalo, New York, are designed to deliver reliable, heavy-duty service with minimum of maintenance. Gemco engineers safeguard these performance specifications by using only quality materials, including Republic Nylok® Bolts and Nuts for critical assembly connections.

For example, in the Gemco Rotary Mower line, a particularly vital point is the assembly of blade to engine drive shaft. Use of a Republic Nylok Hex Head Cap Screw for this purpose assures a vibration- and shock-proof connection of maximum safety and strength. Moreover, the Nylok cap screw can be repeatedly removed and re-used to permit blade sharpening, reversal, or replacement—without loss of holding power.

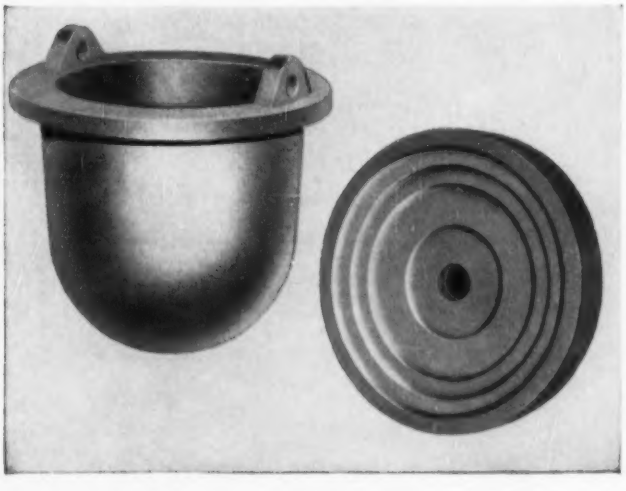
The unique characteristics of Republic Nylok Bolts and Nuts suit them perfectly to many tough fastening problems. Permanent locking is provided by a nylon pellet imbedded in the fastener body which forces a tight, metal-to-metal lock between opposite mating threads. A positive grip is maintained wherever wrenching stops. Resiliency of pellet allows both adjustment and re-use.

It will pay you to explore these and other advantages of Republic Nylok Fasteners in relation to your assembly requirements. For details, contact your nearest Republic Office, or mail coupon.

ECONOMY, CORROSION-RESISTANCE, AND PAINT-HOLDING SPECIFICATIONS make Republic Electro Paintlok® Sheets ideal for this unusual product. Produced by the Self Sett Mouse Trap Company, Cleveland, Ohio, it is a fully automatic mouse trap. Mr. E. S. Coughanor, President, found Republic Electro Paintlok best by actual test for every requirement. If you want to "build a better mouse trap" in your product field, the features of Republic Electro Paintlok may work to your advantage. For details, mail coupon.



REPUBLIC COLD FINISHED ALLOY STEELS provide required reliability in gear components of this portable electric saw produced by the Black & Decker Manufacturing Company, Towson, Maryland. The strength and toughness of these steels enables Black & Decker gears to shrug off repeated shock and heavy loading—and come back for more. Republic Cold Finished Alloy Steels may provide the perfect answer to a tough application or production problem troubling you. Send coupon for further data.



MELTING POT AND FLYWHEEL SPECIFICATIONS for these castings produced by The Union Metal Manufacturing Company, Canton, Ohio, call for a pig iron with great machinability, density, and heat resistance characteristics. Over the years, the ideal answer to these requirements has been Republic Chateaugay Pig Iron. Exclusive with Republic, Chateaugay combines high carbon with unusually low phosphorus and is copper-free. Chateaugay's uniform distribution of chemical elements produces a dense grain structure which results in economical machining, plus excellent heat- and wear-resistance. For more information, mail coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

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Please send more information on:

- ☐ Nylok Nuts
- ☐ Chateaugay Pig Iron
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Company_____

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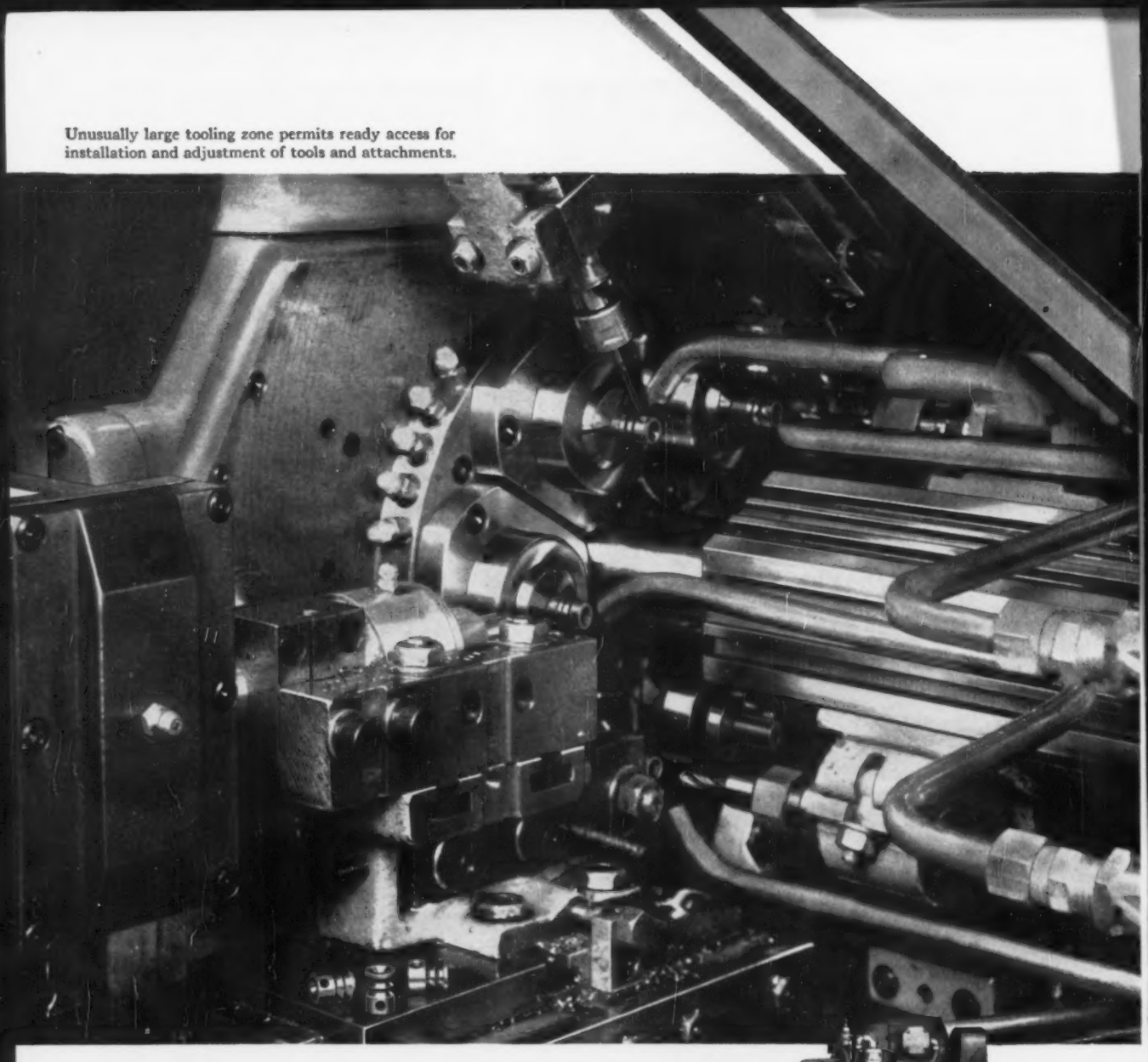
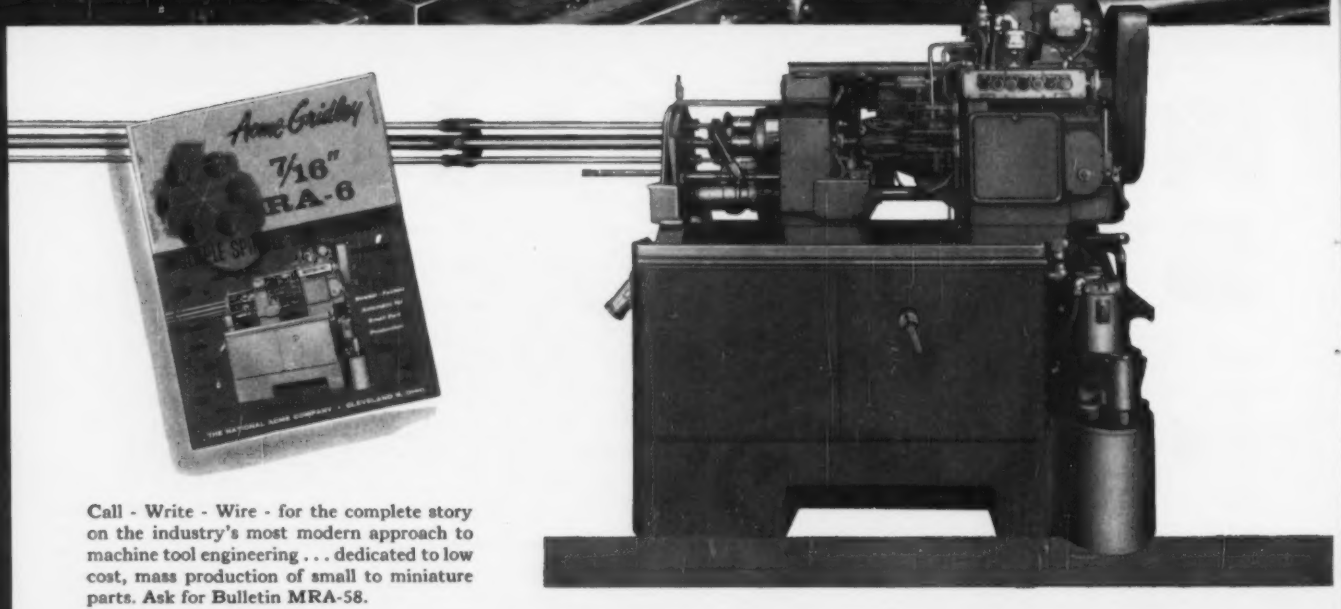
Unusually large tooling zone permits ready access for installation and adjustment of tools and attachments.





Call - Write - Wire - for the complete story on the industry's most modern approach to machine tool engineering . . . dedicated to low cost, mass production of small to miniature parts. Ask for Bulletin MRA-58.

THE 7/16" SIX.....

NEW ACME-GRIDLEY CONCEPT IN MULTIPLE SPINDLE AUTOMATICS

Longer runs without adjustment . . . greater sustained accuracy at lower cost . . . than any comparable machine in the industry!

. . . and we can prove it!

- **6 PRECISION SPINDLES**
  speeds up to 5200 r.p.m.
- **POSITIVE, DIRECT CAMMING**
  assures lasting accuracy
- **INDEPENDENTLY OPERATED TOOLSLIDES**
  greatly increase flexibility
- **RIGID, BOX-TYPE FRAME**
  provides the "beef", properly distributed that contributes to consistent accuracy at continuous high speeds

Remember...when you buy an Acme-Gridley 7/16" Multiple Spindle Bar Automatic, you're getting the newest, smallest, fastest machine from the world's *only* complete line of multiple and single spindle bar and chucking automatics. We've been making and improving them for 60 years . . . we think we know how!

National Acme

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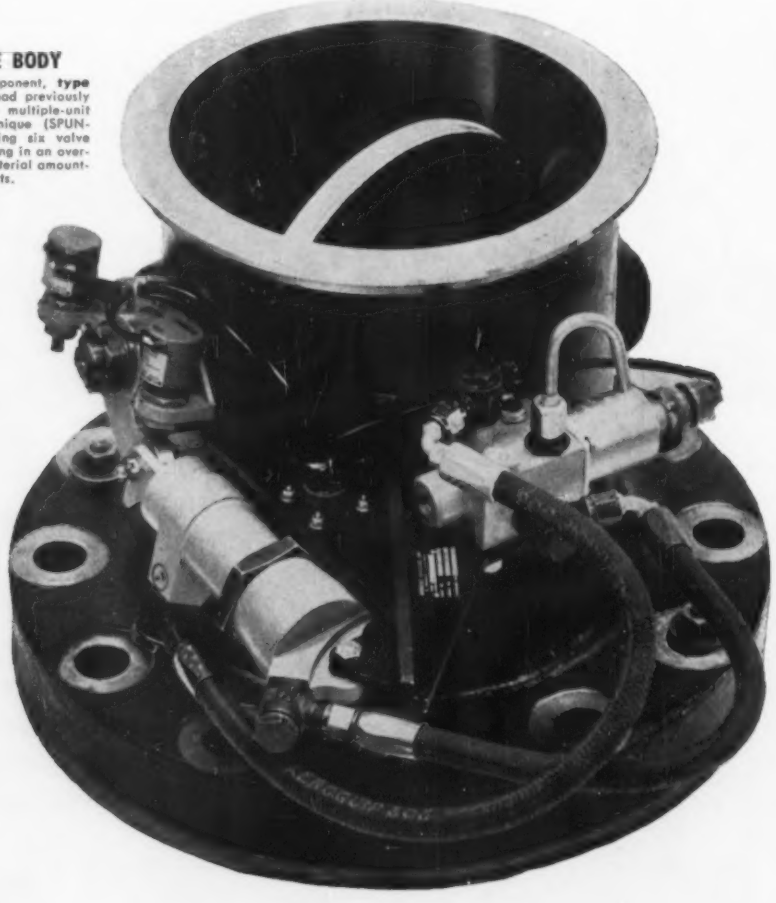
VALVE LINKAGE LEVERS

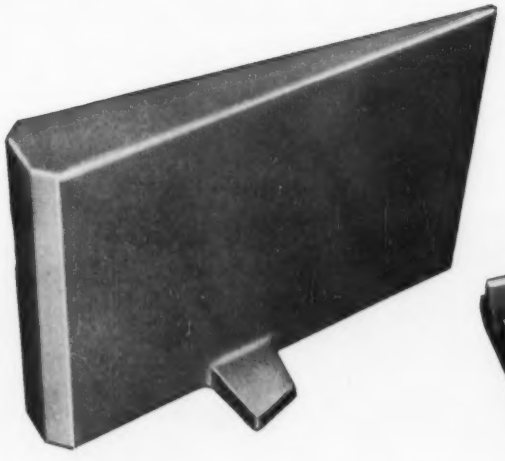
Small parts are no problem. These ESCO SHELLCAST corrosion resistant alloy steel **type 317, A296-49T, CF-8M,** valve linkage levers weigh less than two ounces each.

Before you say, "It can't be cast,"

BUTTERFLY VALVE BODY

This guided missile component, **type 304, A296-49T CF-8,** had previously been fabricated. ESCO multiple-unit centrifugal casting technique (SPUN-CAST®) was used, casting six valve bodies at one time resulting in an overall saving in time and material amounting to 30% of former costs.





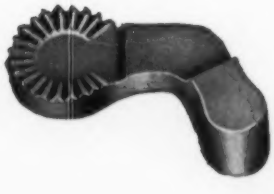
HEAT-TREATING VANE TIP

ESCO SHELLCAST in a heat resistant weldable alloy, **type 302B, A297-49T HF,** eliminated all former machining.

CAN CONVEYOR LINK

ESCO SHELLCAST eliminates difficult machining operations on carbon steel conveyor link used in food plant.

call an *ESCO* Engineer...



ESCO alloy steel castings can make your designing *easier*. You get the part you want, in the alloy you need and in the shape that saves you the most fabricating, machining and finishing time . . . ***PLUS***

METALLURGICAL ENGINEERING AND RESEARCH

ESCO maintains one of the largest and best equipped metallurgical staffs of any alloy steel foundry . . . ***PLUS***

PRODUCT ENGINEERING AND DESIGN

An integrated service at all levels; in the field, at the drawing board and in the foundry . . . ***PLUS***

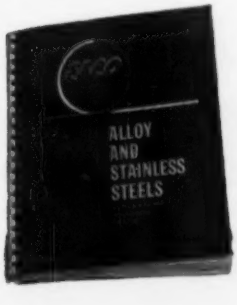
FOUNDRY FACILITIES AND CASTING EXPERIENCE

A casting service that covers the complete range of alloy steel casting methods for all applications . . . ***PLUS***

LABORATORY INSPECTION AND TESTING

ESCO laboratory technicians are qualified and equipped to perform all types of inspections and testing to the most rigid specifications.

Write today for your FREE copy of this informative 100-page reference book—"ESCO Alloy and Stainless Steels for the Process and Manufacturing Industries".



Call an ESCO Engineer — let him show you how ESCO Alloy Steel Castings can help make your designing easier.

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1017 Griggs Street
Danville, Illinois

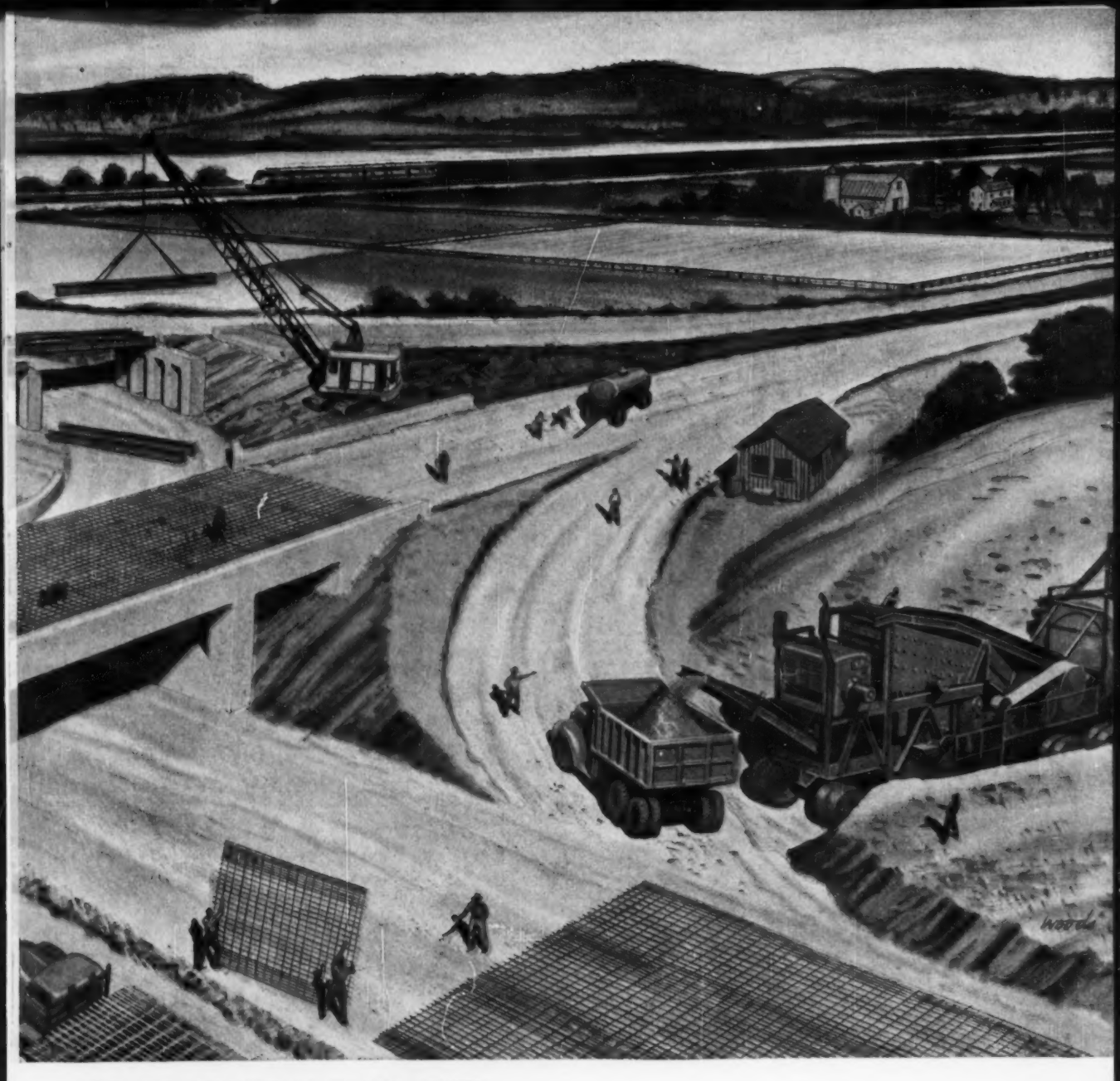
ESCO International and Eastern Sales:
420 Lexington Ave.,
New York City, N.Y.

Other Offices and Warehouses
Los Angeles, San Francisco, Calif.; Seattle, Spokane, Wash., Salt Lake City, Utah; Denver, Colo.; Houston, Texas; Eugene, Ore.; Centralia, Pa.; Honolulu, Hawaii.

In Canada, ESCO Ltd. Manufacturing Plants
Vancouver, British Columbia; Toronto, Ontario, and Montreal, Quebec.

CF&I STEEL

1. Wickwire Rope
2. Wickwire Wire Rope Slings
3. CF&I Cutting Edges
4. Clinton Welded Wire Fabric
5. CF&I Industrial Screens
6. CF&I Reinforcing Bars
7. CF&I Nails and Spikes
8. CF&I Woven Wire Fence & Fence Posts
9. Cal-Tie Wire
10. CF&I Rails, Spikes, Track Bolts and Tie Plates
11. Claymont Heads
12. Claymont Fabricated Steel Parts
13. Claymont Large Diameter Pipe
14. Claymont Alloy Steel Plates
15. Realock Chain Link Fence
16. Wickwire Springs
17. Gold Strand Insect Wire Screening



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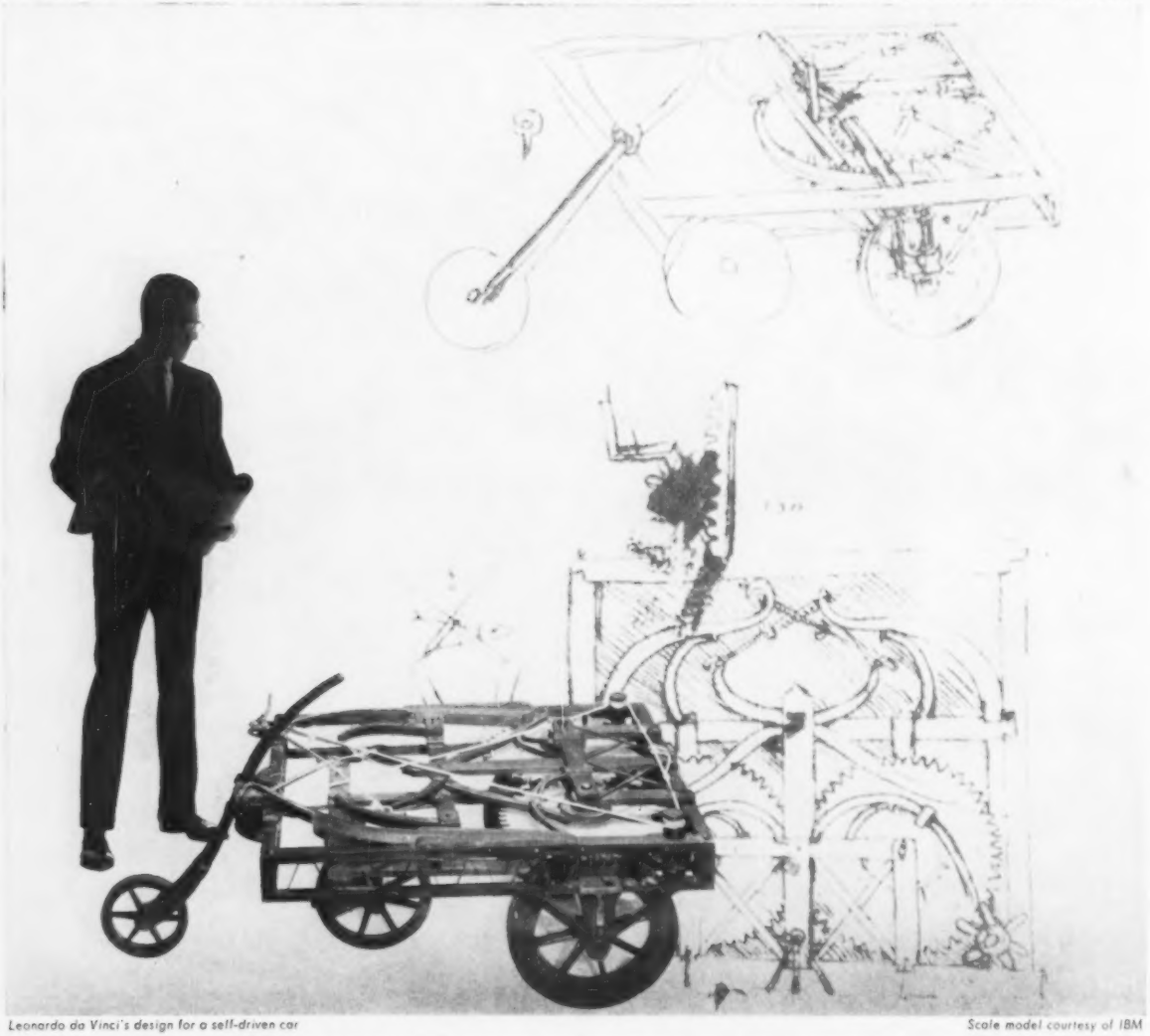

Leonardo da Vinci's design for a self-driven car *Scale model courtesy of IBM*

EVEN DA VINCI'S SELF-DRIVEN CAR COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER.

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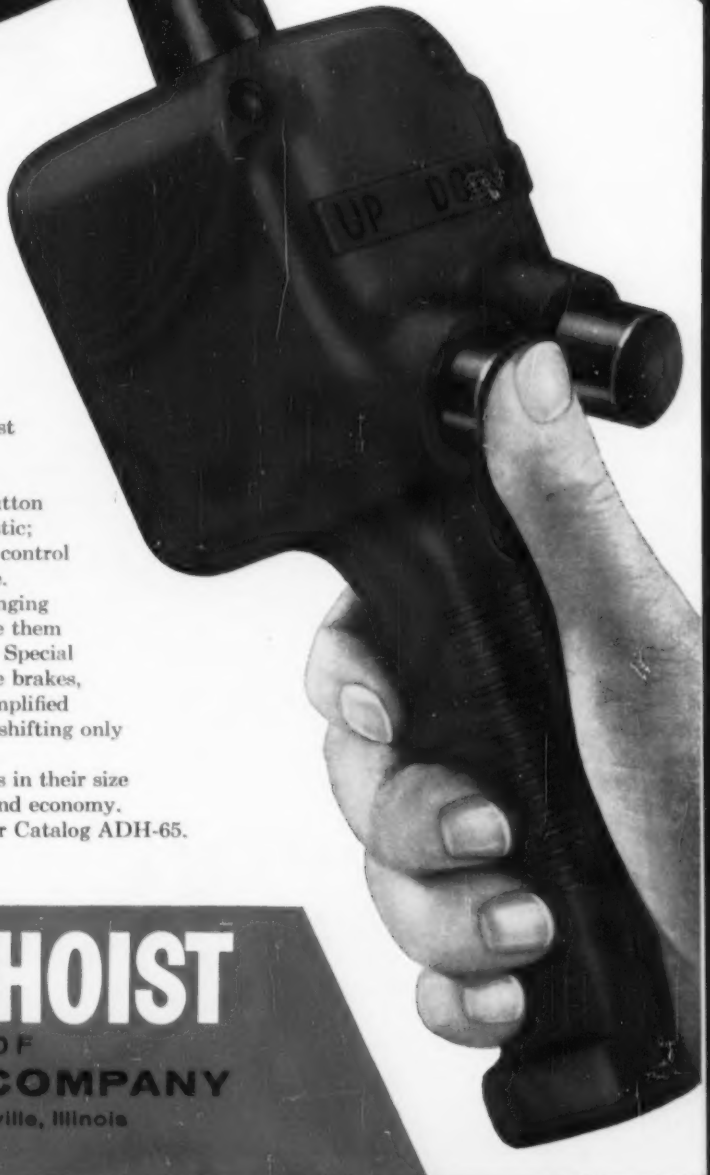
The New

COFFING Quik Lift

COIL CHAIN ELECTRIC HOIST



"Pistol Grip" push-button station permits easier handling of loads

Without shifting his grip, an operator can depress the up-down buttons of the "Pistol Grip" push-button station and at the same time pull a trolley mounted hoist along the beam to another position—a strain cable is incorporated in the control cord.

Convenience is coupled with safety, since the push-button station is made of non-conducting, impact resistant plastic; the push-buttons are mechanically interlocked; and the control circuit is limited to 115 volts, regardless of hoist voltage.

Coffing Quik-Lift hoists are available in 20 models ranging from ¼ to 2 tons in capacity. Aluminum housings make them lightweight and easily portable, yet strong and durable. Special features include instantaneously releasing magnetic-type brakes, five-pocket load sheaves for reduced chain wear, and simplified wiring systems which permit motor voltage changes by shifting only seven quick connect terminals.

The new Coffing Quik-Lifts are the outstanding hoists in their size range from the standpoints of convenience, durability and economy. For details, consult your Coffing distributor, or write for Catalog ADH-65.

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This 32-page catalog will help you determine how Heroult Electric Furnaces can improve your operation and enable you to make better-quality steels; tells you when and where an electric furnace is logical; gives types, sizes, capacities and ratings. For your free copy, get in touch with any of the offices listed below or write direct to Pittsburgh.

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A well-known garage door manufacturer dispensed with plating operations—reduced costs 10%. A leading furnace manufacturer saved $20 per thousand parts produced by eliminating cleaning and painting. A company making roller gravity conveyors cut out similar operations. These are just a few of many case histories of manufacturers who realized important savings and improved their product when they started using TI-CO Galvanized Sheets.

Whenever a product requires the strength of steel, plus corrosion resistance, Inland TI-CO is the most satisfactory . . . the most practical . . . the most economical material to use. That's because TI-CO is produced with a zinc coating that will not flake even under the toughest conditions. The coating stretches with the base metal during fabrication. Deep drawing, brake or roll forming, crimping, stamping, lock-seaming even severe spin-drawing . . . TI-CO takes them all in stride with no flaking or peeling. With TI-CO there's no need for costly dipping or touching up. And the uniform, bright spangled finish adds to the over-all attractiveness of the product.

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Nuclear Ships Aid Metals

Nuclear-powered ships will soon open new markets for metals and other products. The world's first nuclear merchant ship will be launched here next year and be in service by 1960. The $20.9-million cargo-passenger ship may cruise 500,000 miles before refueling. Success of this ship, and nuclear submarines and warships, will boost shipbuilding and bring demand for new metal products.

Boost for Weld Tolerances

To be announced soon: Resistance welding equipment for the aircraft industry that will hit heretofore impossible weld tolerances on a production line basis. The unit seems to be aimed for the precise welding demanded for the increasingly varied numbers of new experimental aircraft.

Foreign Kickbacks Not Valid

Kickbacks paid to foreign governments no longer can be claimed as business expenses. New tax law bars claims for payments that would be illegal under U. S. statutes. Senate insisted on the prohibition. Lawmakers heard of one firm's claim—most of it allowed—of $1.8 million in deductions for bribes paid to foreign officials.

Small Companies Find Talent

This year's engineering graduates found companies slower in bidding for their services, but most have been signed by now. Smaller companies took advantage of the easier demand to line up promising graduates. In recent years the biggest firms have outbid the others for engineering talent.

Man-Made Rubies at Work

Man-made rubies have been put to work in a low temperature device, the ruby maser, which can out perform both electron tubes and transistors. The ruby maser opens up new possibilities of greatly improved operation in the microwave frequency range from 100 to 20,000 megacycles. The gyroscopic motion of electrons at temperatures near absolute zero amplifies weak radio signals. The unit is so sensitive it can detect the tiny natural emission from any object warmer that the ruby itself.

Vibrations Aid Rolling

Two new road compacting machines each have twin rollers that vibrate alternately to develop an optimum condition of compaction and traction. The vibrators operate at a frequency of 3600 cycles per minute. The larger of the two units, weighing about 1400 lb, is designed for road and runway construction and will compact hard-core, under and top-surface dressings.

Metal that Almost Floats

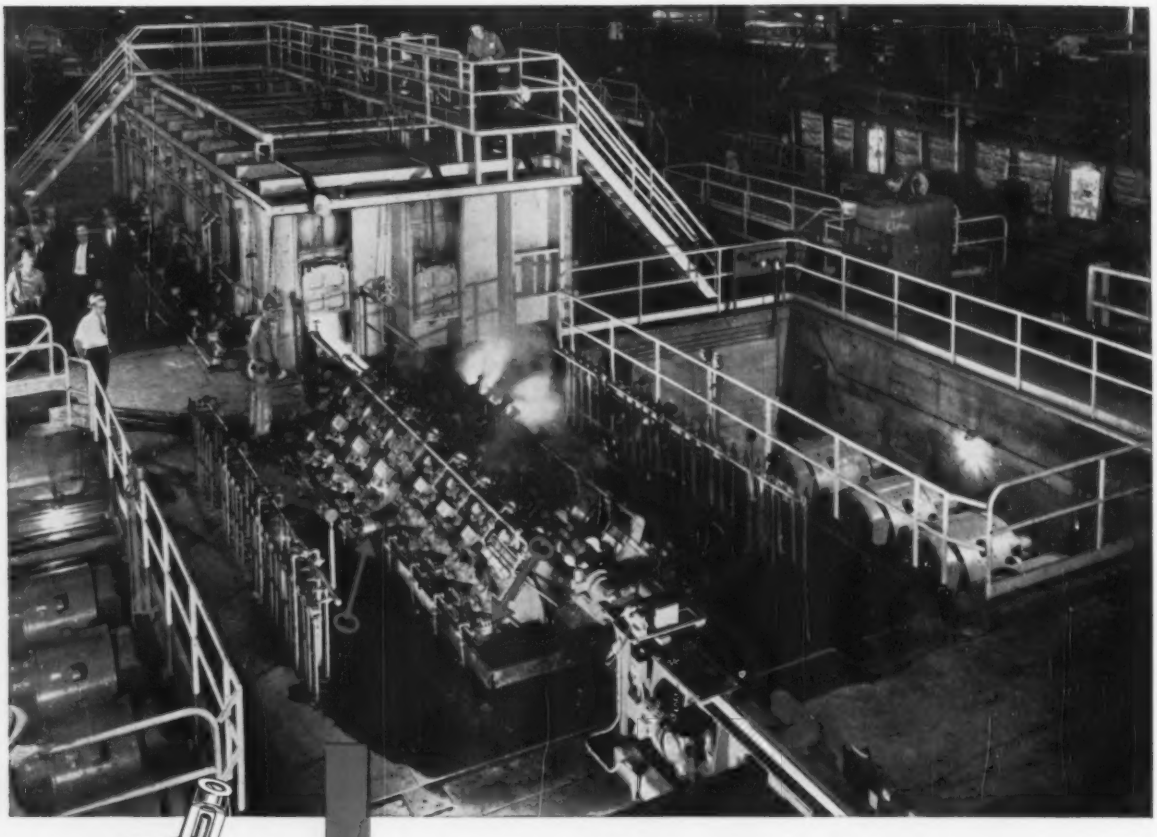
While experimentation with titanium as an armor plating for military equipment continues, a relative newcomer is causing considerable interest. It's a magnesium-lithium combination plate reinforced internally with steel fibers with high strength and deflection properties. Yet it's even lighter than titanium.

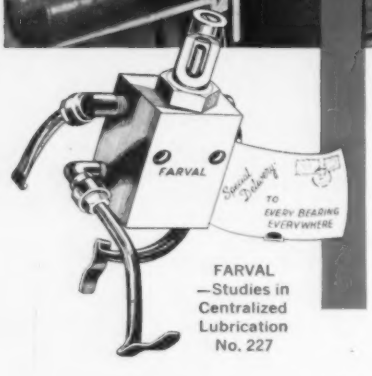
How to Make Clean Steel

What factors can be depended on to determine the quality of consumable-electrode-melted steel ingots? A recent test program shows that the ingot with the best surface condition will not necessarily have least porosity or lowest inclusion count. In melting, avoid intermediate current ranges. Both higher and lower current densities seem to produce the cleanest steels.

Anti-Skid Unit for Autos

An anti-skid device permits maximum braking effort but prevents wheel lock and resultant skidding. It has evolved from a well-known anti-skid gear now fitted on many civil and military aircraft. It's placed between the driver's brake pedal and the brake. Any increase in angular wheel deceleration (that would precede an impending wheel skid) immediately relieves brake pressure. The driver can apply full braking effort in knowledge that the unit will hold the balance at near-optimum braking.





FARVAL
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Centralized
Lubrication
No. 227

Farval protects bearings as tubing is reduced from 7 to 2 inches

ON this 16-stand Aetna-Standard tube stretch reducing mill, bearings take tremendous pressures as cherry red tubing is reduced from 7 to 2 inches in diameter. And lubricating those essential components is a Farval centralized system delivering measured amount of lubricant at set intervals to every bearing. These bearings are lubricated automatically and safely while the mill is actually in operation.

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A New Set of Marketing Rules Helps Appliance Comeback

With the dealer calling the turn, appliance makers are revising their marketing approach.

Trimming their lines is one of a series of changes in sales strategy.—By K. W. Bennett.

■ The surprising appliance industry sailed through the July doldrums and is still gaining speed. And in the wake of the fading recession, it is leaving shattered remnants of many of the old marketing rules.

On the effectiveness of some new sales approaches, appliance sales have been advancing at a slow pace for months. Within the past four weeks, at least four manufacturers of major appliances have revised their manufacturing schedules for the second half by five to 15 pct.

Dealer Dictates — Part of the change in the new sales approach of appliances is due to the fact that the dealer is king, and has emerged as the key figure in any sales campaign.

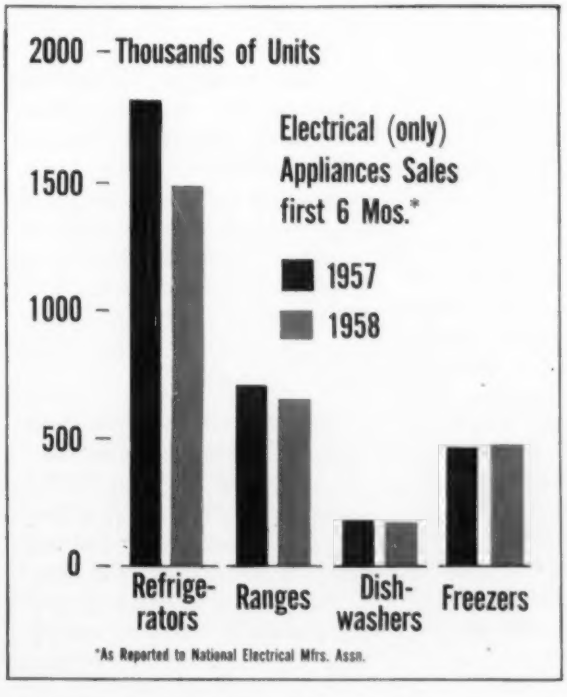
And under dealer - distributor pressure, appliance makers are trimming their lines, a turn-about that has brought added manufacturing economies and eased inventory problems.

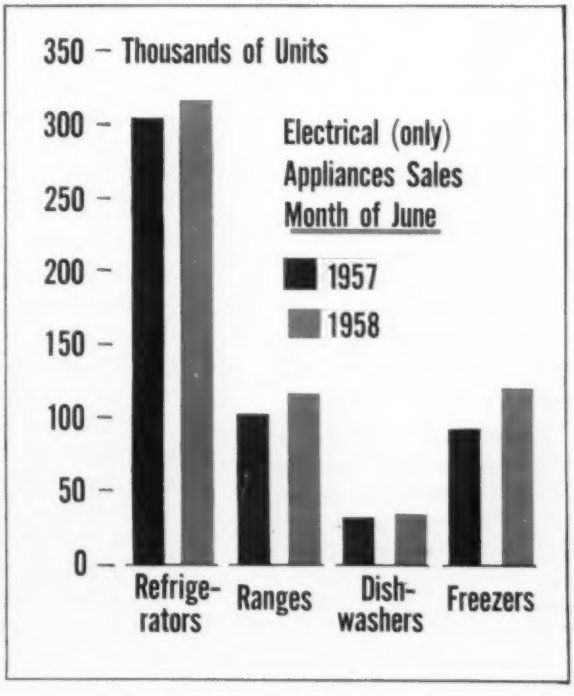
Fewer Lines—In this new trend, the standard four-model product lines are shrinking. A model historically has been offered as "stripped"; "standard"; "custom"; or "super-custom."

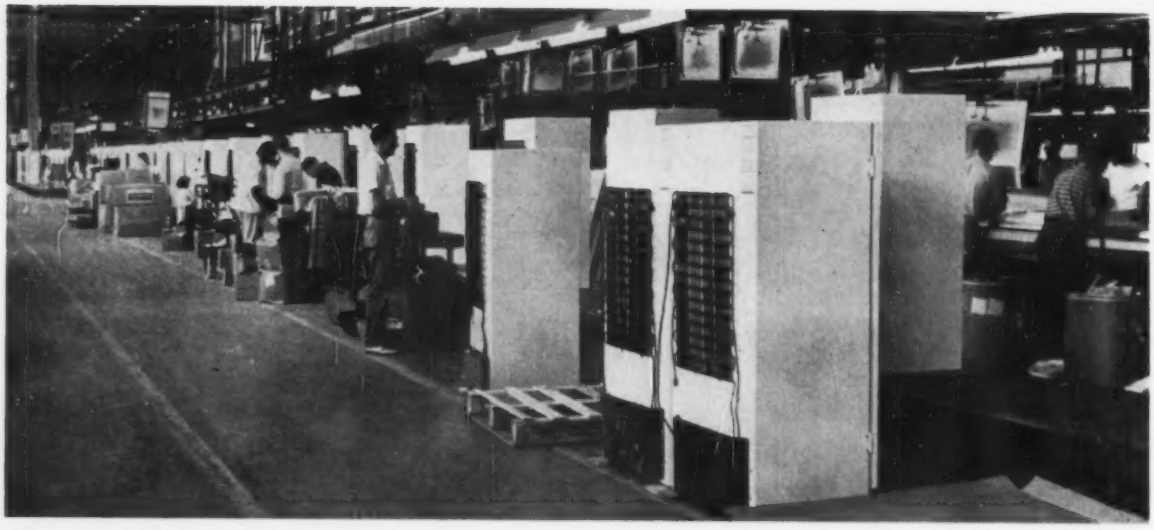
The standard and stripped category, most appliance sellers believe, is shrinking into a single category. The new low priced model is sold with price as the primary customer appeal. But, like the old "standard," every innovation that the low

Are Appliances Making a Comeback?

Although Sales for the Year are off . . . Recent Sales Top Year Ago







IMPROVEMENTS: Westinghouse refrigerators move along through inspection and assembly. Key point here is new condenser, with tubing resistance-welded automatically to a wire frame. Wire was specially developed by Jones & Laughlin steel company for the new and improved manufacturing step.

price allows is put on the model.

Profit per unit is lower, but the low price is expected to boost turnover. A short-line producer (one who produces one or two major appliance lines) was the first to make the move, and the big full-line producers were forced to follow.

Gadgets Still Available — The "super-custom," loaded with all the gadgets a customer's purse will bear, remains. The "custom" model is becoming the "special," a standard item to which are added whatever colors or special equipment a dealer-distributor feels will boost sales in his territory.

The manufacturer has now dropped from four basic models to three, or even to two. The economies are still doubtful, however, if he is saddled with "specials," which require extra handling all along the assembly line.

Square Look — Another change is the "square look," as competitors call it, pioneered by General Electric. It caused some agony in the initial changeover, but allows greater manufacturing economies as assembly lines are geared for the fashion.

As one appliance maker puts it, "Putting square corners on refrigerators may look easy, but we couldn't have afforded to pioneer a job like that. It's cost us plenty to change over and follow their lead. But I don't think the industry will ever go back to the old shapes—we couldn't afford to, now we've made the change."

Short Line Producers—Probably related to the trimming of individual product lines is the success of the short line appliance manufacturers. It used to be argued that low carload lot selling prices would wipe out the manufacturer who produces one or two major appliances, but not a full line.

Yet Amana, producing only refrigeration and air conditioning equipment, has grown steadily through the 50's. Indications are that the Iowa firm will show another gain in 1958.

Maytag, specializing in laundry equipment, will retire 85,000 shares of preferred stock Nov. 1, an indication of its financial position. And, on the basis of first half sales, it is only a fraction of a per cent off 1957 sales. Gibson refrigerator moved ahead of 1957 in the first half.

Steel Orders Up — Despite the warmer outlook, few appliance makers will talk publicly of what they'll do in the second half. But some of their orders for steel indicate they intend to boost production schedules.

Steel buyers in the appliance industry moved up their lead time on mill orders to 45 days as early in June. Inventories of steel are being advanced from as little as five days only four weeks ago to as much as 30 days. Orders for October and November cold-rolled sheet, enameling iron, and coated sheet, are being placed now.

Bookings for one or two specialized products extend through December into January. Even if the salesmen don't want to talk about the second half, their manufacturing side is already acting on improved prospects.

Help for Dealers — With the dealer in the key role, manufacturers are doing more for them in terms of advertising, sales guidance and the like. Credit to dealer-distributors is extended. The dealer is highly selective, and, rather than carry an entire line of one manufacturer, he selects the best sellers in

each line offered by a number of producers.

Price is a problem, with the buying public becoming more price-conscious every day. Sales chiefs believe they can hold the price line until after new models are introduced, until October, at least.

But, as one executive puts it: "Workers get a 3.5 pct wage increase this year under our five-year contract. They're pushing for more than that. Our raw materials and components have been going up all year. The price push may not come until January, but count on it. They will have to go up.

Based on individual manufacturers' reports, July appliance sales exceeded June (see chart) in refrigerators, freezers, laundry equipment, and ranges. August will exceed July. The industry is 10 pct off last year, but closing the gap.

Third Best — If improvement continues, 1958 could be the industry's third best year.

With the dealer-distributor more than ever in the key role, appliance makers are putting him in the center of their advertising and sales promotion programs.

And manufacturers have gone after dealers and distributors in a no-holds-barred contest. GE put its entire marketing and sales force in the field for a time to extend guidance to dealers.

Promotion Works — Westinghouse, in a number of important areas, featured individual dealers in their local advertising campaigns. Gibson Refrigerator boosted its promotion department, then included dealers and distributors in a holiday contest originally planned only for the sales force.

Maytag sold $17 million in finished products in 72 hours of concentrated dealer-distributor selling, with the firm's entire force of top level executives taking part.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Industry Foots More Tuition Bills

▪ Standing in line at college registration desks this month will be thousands of full-time industry employees whose tuition is paid for—at least in part—by their employers.

Among companies who are encouraging employees to go back to school is Westinghouse Electric Corp., which estimates that 2300 of its professional employees will be attending college part-time this fall under a company-sponsored program.

Pace Continues — Last year, Westinghouse shelled out $214,000 in tuition refunds to employees who completed courses or received advanced degrees. Requests during the coming year are expected to remain at the same level.

"We feel that education is one important aspect in an individual's professional development," says G. D. Lobinger, manager of Westinghouse educational department.

A Company Investment — "While the final responsibility for development is on the individual's shoulders, our program not only encourages them to continue their studies, it also makes substantial investment in their educations," Mr. Lobinger explains.

Westinghouse employees will be studying at more than 25 colleges and universities located near plant office locations while they continue their full-time careers.

500 Get Degrees — Under the Westinghouse program, the company refunds half the tuition cost to an employee when he successfully completes each course. The remaining half of the tuition is refunded when the entire scholastic program is completed.

To date, over 500 employees have received degrees under this plan, Mr. Lobinger reports. These include 27 who were awarded doctorate degrees and 492 who were graduated with master's degrees. During the 1957-58 academic year, four employees at Westinghouse received Ph.D.'s and 51 received master's degrees.

Two Plans Offered—In the Westinghouse setup, two types of educational plans are available to employees. The graduate study program is designed for those who originally majored in engineering, physical sciences, and business administration who wish to continue their educations for advanced degrees in their field.

However, for engineers and scientists—who rarely have the opportunity to carry elective courses in business administration as undergraduates—there is the business and management program. It is designed to encourage study in such fields as economics, marketing, industrial management.

New Japanese Mill

First automatic rolling mill for the Japanese steel industry is being built by the Mesta Machine Co., Pittsburgh.

The 68-in., four-high, semi-continuous hot strip mill will be installed at the Mizue Works of Nippon Kokan K.K. near Tokyo. It will include the initial overseas application of Westinghouse Electric Corporation's PRODAC System. This will enable the mill to perform a complete rolling schedule from information stored on prepunched IBM card.

IN COMES THE NEW: Handshakes all around as GM's new top management takes over. From left: Retiring president Harlow H. Curtice; new board chairman Frederic G. Donner; retiring board chairman Albert Bradley; and new president John F. Gordon. Mr. Donner becomes chief executive officer for GM.

A New Look in GM's Top Ranks

▪ When General Motors changed top management horses last week, it made the change in troubled waters with severe cross currents.

These cross currents included cantankerous labor, problems with the courts, major decisions to be made on style and structure of its cars, and an auto market that looks to be less than the best.

These may be the underlying reasons why the new chief executive officer is a financial man; why the president takes on the role of chief operating officer, presumably with close personal attention to engineering and manufacturing.

The New Chief—In the changeover, brought on by retirement age, Frederic G. Donner replaces Albert P. Bradley as chairman of the board and becomes chief executive officer.

Mr. Donner's career with GM has been entirely on the financial side.

New President—John F. Gordon replaces Harlow H. Curtice as president, but will not be the company's chief executive officer, as was Mr. Curtice. He will be the chief operating officer.

Mr. Gordon came up through Cadillac, was chief engineer, then general manager before becoming a group vice president.

Problems Ahead—Here are some of the problems facing GM:

After five months of fruitless negotiating, labor talks are at the showdown stage, just as GM swings into production of 1959 models.

And the continued popularity of small cars, in the face of this year's dreary sales, will call for a positive decision in the near future, either to give the full go-ahead to the small car program, or to hold to conventional styling and production.

A solution must still be found which will enable DuPont interests to divest some 23 pct of GM stock without depressing its market value for other shareholders.

Study in Contrasts — The contrast in personality of the new administration with the former is significant to automotive insiders. Mr. Donner, in particular, is little known outside the GM inner circle, avoids interviews and public appearances with a passion.

He is the exact opposite of Mr. Curtice, who moved in the limelight and led the corporation with considerable flair to the first $1 billion earnings year ever reached by a U. S. corporation.

How Metalworking Pays Top Men

Light Machinery Pays Well, But Recession Hurt

Size for size, chief executives in this group are ahead of the average for all industry.

But survey shows they were more vulnerable in the recent recession, and got fewer raises.

▪ The chief executive officer of a light machinery or metals plant enjoys a compensation bulge about 15 to 20 pct better than the head of the average plant of comparable size.

But he is also more vulnerable to the effects of the recent recession. He has fared less well in the past year in terms of increases in salary and other forms of executive compensation.

Survey Results—These are some of the conclusions disclosed in a survey of management pay just completed by McKinsey & Company, Inc., New York management consultants.

This survey was directed at a rather loose industry group, called, for survey purposes, light machinery. It includes office equipment, home heating and plumbing equipment, home appliances, pneumatic tools, small electrical equipment, brass mill products, and small fabricated items.

But although it covers a broad range, it also includes the heart of metalworking and gives a good indication of how the average metalworking chief executive is faring.

Annual Pay $98,000—The typical chief executive in the group draws annual compensation of $98,000. Although this is higher than the industry average for comparable size, it compares with the all industry average, regardless of size, of $108,000.

The chief executive's top assistants fit almost identically with the all industry pattern in relating their salaries with the top man.

The No. 2 man get 69 pct of compensation paid the chief executive; the No. 3 man 56 pct, and No. 4 man, 42 pct of the top salary.

Workers Well Paid—But while the four highest paid bosses fall 18 pct below the all industry average, regardless of size, the non-supervisory workers are among the highest in the industry. Average annual pay hits $4904, compared with $4445 for all industry, according to Bureau of Labor Statistics.

But in 1957, as the recession started to hit, light metals chief executives got fewer raises and more cuts than in all industry.

McKinsey economists say this is because the group was hit harder and earlier by the oncoming recession, and its executives were among the first to feel effects.

Fewer Raises—In 1957, 37 pct of the light machinery companies reporting increased the compensation of the chief executive officer; 30 pct decreased it, and 33 pct reported no change.

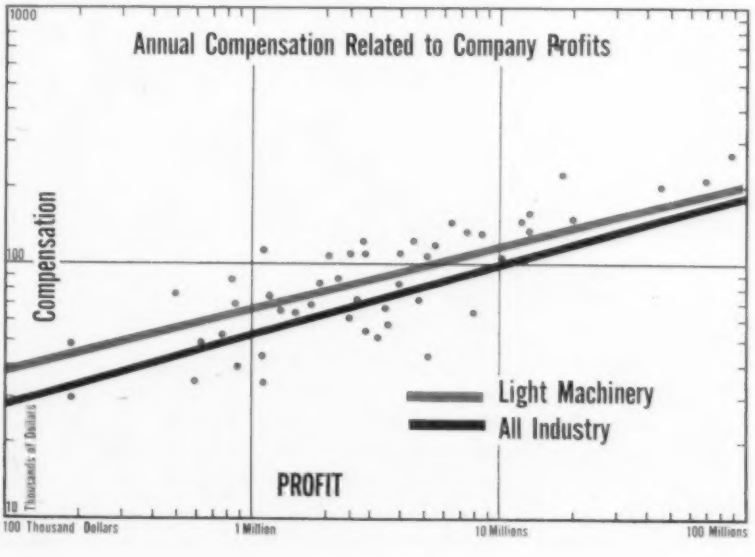
Of all companies surveyed, 43 pct of the top men received increases; 30 pct held the line, and 27 pct experienced cuts.

Unfortunately for the group, this lag may increase in 1958. McKinsey's preliminary studies show that the group suffered further sales and profit declines in the first half, with 60 pct of the companies in the group reporting profit declines of more than 30 pct.

Sixty-five pct of the group have stock option plans, comparing with 59 pct of all industries. This is a 6 pct increase.

Profit sharing trusts are also popular, with 20 pct of the group having these plans compared with 11.5 pct in all industry.

Light Machinery Tops Average



Stainless Enters Tonnage Class

Sales, Not Supply, Are Industry's Major Issue

New, high-speed mills are giving stainless producers plenty of capacity.

But shipments have been below 1955's peak level during the last two years.

So sales drives get major attention.—By G. J. McManus.

▪ Stainless steel has moved into the tonnage class. Rapid expansion of flat rolling facilities in the past three years has left the situation like this:

Three of the four biggest steel mills are now in the stainless business with both feet.

Big, high-speed mills have taken over from narrow hand mills.

For the first time stainless producers can now go after new business with the assurance of ample supplies over a period of years.

New Production—The push that started in 1955 includes ten modern mills for cold rolling stainless sheet and strip. Republic Steel put in a 49 in. Sendzimir mill in 1957. More recently U. S. Steel added 18,000 tons with a Sendzimir mill at Vandergrift, Pa. and 10,000 tons with a reversing mill at Gary.

Allegheny Ludlum, Crucible Steel, Eastern Stainless Steel Corp., and Washington Steel have added or are adding new Sendzimir mills. On top of all these will come new flat rolling facilities at Jones & Laughlin and Universal Cyclops.

Late last month J&L made the first shipments from its new $17 million Stainless and Strip Div. plant at Louisville. Built around a 52 in. Sendzimer mill, the plant will ultimately be able to turn out 36,000 tons of stainless sheet and strip.

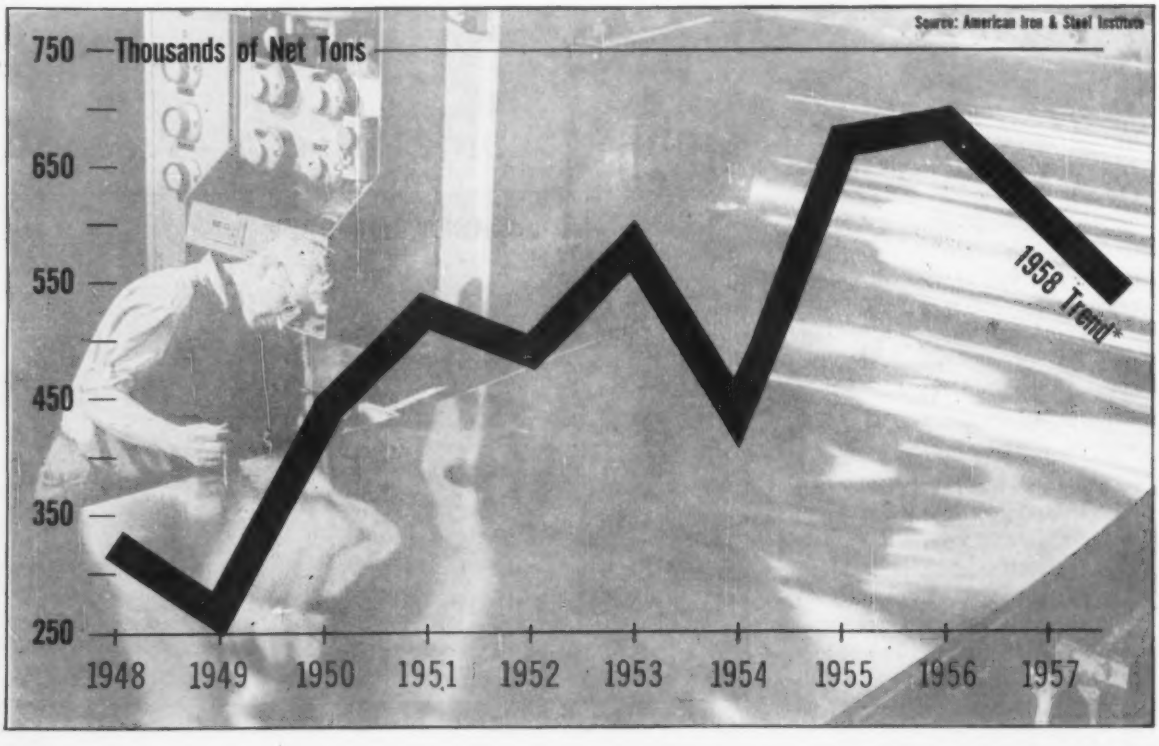
Universal Cyclops is adding 18,000 tons of strip capacity with a 25 in. four-high reversing mill at Coshocten, Pa.

Shipments Dip — Stainless men are reluctant to pin numbers on their new finishing capacity. They say gage, product mix, and auxiliary facilities can alter capacities radically. One authority guesses that the total addition from 1957 to 1959 will be 100,000 tons for flat rolled stainless and that total capacity of this product will hit 600,000 tons next year.

Others say these figures are high

Stainless Competition Tightens as Capacity Grows

Shipments of Stainless Steel.



but it is certainly true a big chunk of finishing capacity has been added. At the same time shipments of flat rolled stainless have been sliding at an alarming rate.

Peak shipments of stainless sheet and strip came in 1955 when more than 450,000 tons were sold. Since then each year has seen a dip. In the current general slump, sheet and strip are moving at an annual rate of about 260,000 tons. Stacked against capacity of 600,000 tons or even 500,000 tons, this kind of demand can only mean active competition.

Pricing Murky—To what extent the action has taken the form of price cutting can only be surmised. Stainless men go underground when the subject of price is mentioned. Competitors and even customers were still trying to get full details on one mill's stainless plate prices a week after new schedules had been put through.

The failure of stainless flat rolled prices to move up with other steel products suggests cutting. There are all kinds of rumors. But the price situation is complicated by a number of factors.

Production Trends — For one thing stainless is in a dogfight with aluminum for automotive and other applications. Stainless men say their product has an edge in final cost as auto trim but the margin is slight and aluminum prices have gone down this year.

In addition there is the point of modernization. Stainless men defend the quality of hand mill products and say hand mills are still very much in the picture. But the trend is toward wide coils produced on cluster mills. For narrow widths, producers are going mainly to four-high reversing mills.

Price Increases?—Operating now with modern equipment, stainless mills may be taking another look at flat rolled price schedules. One stainless man says costs will force increases of bar and wire prices but that sheet and strip will remain at present levels for a while.

New Stainless Finishing Capacity

Company	Location	Mill Size
Allegheny Ludlum	Brackenridge, Pa.	50-in. Sendzimir
Allegheny Ludlum	Wallingford, Conn.	30-in. Sendzimir
Crucible Steel	Midland, Pa.	50-in. Sendzimir
Eastern Stainless	Baltimore	50-in. Sendzimir
Jones & Laughlin	Louisville, O.	52-in. Sendzimir
U. S. Steel	Vandergrift, Pa.	52-in. Sendzimir
U. S. Steel	Gary	4-hi Reversing
Universal Cyclops	Coshocten, Pa.	25-in., 4-hi Reversing
Washington Steel	Washington, Pa.	52-in. Sendzimir
Republic Steel		49-in. Sendzimir

For the future, stainless men are revising growth curves that were projected from 1955. At that time it appeared that total stainless shipments would top 800,000 tons by 1960 without any strain. Now timetables are being pushed back several years. Current thinking is that there is ample capacity until the mid-sixties.

However, forecasters freely admit they could be fooled again. Existing markets are abnormally depressed today; a spurt in auto sales to 1955 levels could change the whole picture. And the development of one new tonnage application like auto bumpers could take a big bite out of the surplus.

Sales Drive — Moreover, producers are in a position to drive for new markets. The silver lining in their present situation is a real one. With aluminum beating the bushes for new business, stainless producers would be in a weak position if they had to compete with skimpy nickel supplies and old-style equipment.

But, certain that raw material problems are in the past, stainless producers are ready for a hard-hitting sales campaign.

Their viewpoint is reflected by W. B. Pierce, vice president in charge of sales, Allegheny Ludlum Steel Corp., when he says:

"Production of stainless steel has grown rapidly in the past two decades, but this growth has been restricted at times by limits on the availability of strategic raw materials. The stainless industry now has assured supplies of raw materials and modern, efficient processing equipment more than sufficient to meet immediate demand for its products."

Quality Assurance—"We are in the best position ever to do a real selling and promotion job that will broaden the markets for stainless and continue the long-range trend of rapid growth of this metal.

"Allegheny Ludlum, for example, has recently installed not only new Sendzimir mills, but new coil preparation equipment, new soaking pits, new mechanized slab-grinding equipment, new anneal and pickle lines, new control devices for existing mills, and new vacuum melting capacity. All of these things contribute to the upgrading of product quality, which is a most important consideration in the stainless steel industry."

Other big guns in the steel industry besides Allegheny Ludlum are moving into action. United States Steel, with its powerful marketing organization, has increased its stake in stainless by nearly 30,000 tons. Jones & Laughlin's aggressive sales group has moved into the picture with its Rotary acquisition and the cold mill at Louisville. Armco and Republic are strong stainless suppliers.

Executive Manhunt Still Active

Recruiters Help Locate Top Management Talent

Search for top personnel goes on despite recession with marketing and financial men in biggest demand.

Hunt should last 5 to 10 years until larger manpower pool is available.—By G. G. Carr.

▪ A good man is still hard to find. Despite the recession business firms are still seeking out the executives of their dreams and wooing them with hard cash. And they are more and more turning to experts for help in the courtship.

Management consultants and recruiters surveyed by The IRON AGE unanimously report that business thus far in 1958 has been at least as good as in 1957. Some report even better volume, but point out the whole concept of executive recruitment is growing, with an increasing number of companies turning to specialists for this delicate job.

Who's Wanted—Most wanted executives are marketing and financial brass, William H. Clark, New York recruiter, reports. He also notes an interesting jump in the number of firms seeking lawyers as salaried house counsel. John Handy of Handy Associates comments that many firms now want top men only, with the idea of letting the new executive figure out if more or fewer subordinates are needed. This trend to solve problems at the top has led to an upgrading of the positions to be filled, Mr. Handy reports.

And Where — Geographically there seems to be little variation in demand, with the exception of California. Demand for executives there is up sharply, probably reflecting the booming electronics industry, which has been relatively untouched by the recession. Heavy demand for marketing and financial men certainly has its roots in the business slump, but that does not mean good men in other lines need go begging. "There is always a demand for the one best man," Handy stresses.

Flexibility Important — Other things being equal executives themselves are usually willing to move to a new job location. New York is still the golden siren, even to those who insist they wouldn't live there on a bet. California and Florida follow as preferred locations. Integration troubles have made some brass leery of the Deep South, particularly when there are school-age youngsters in the family. But generally recruiters question a man who seems too dependent on any one area.

The great brass hunt will probably be with us for the next 5 to 10 years, warns Carl Robinson of Barrington Associates. Our production machinery is geared to growing population needs, but is manned by men drawn from a far smaller manpower pool. It will be some time before enough of tomorrow's executives have grown up to fill the gap.

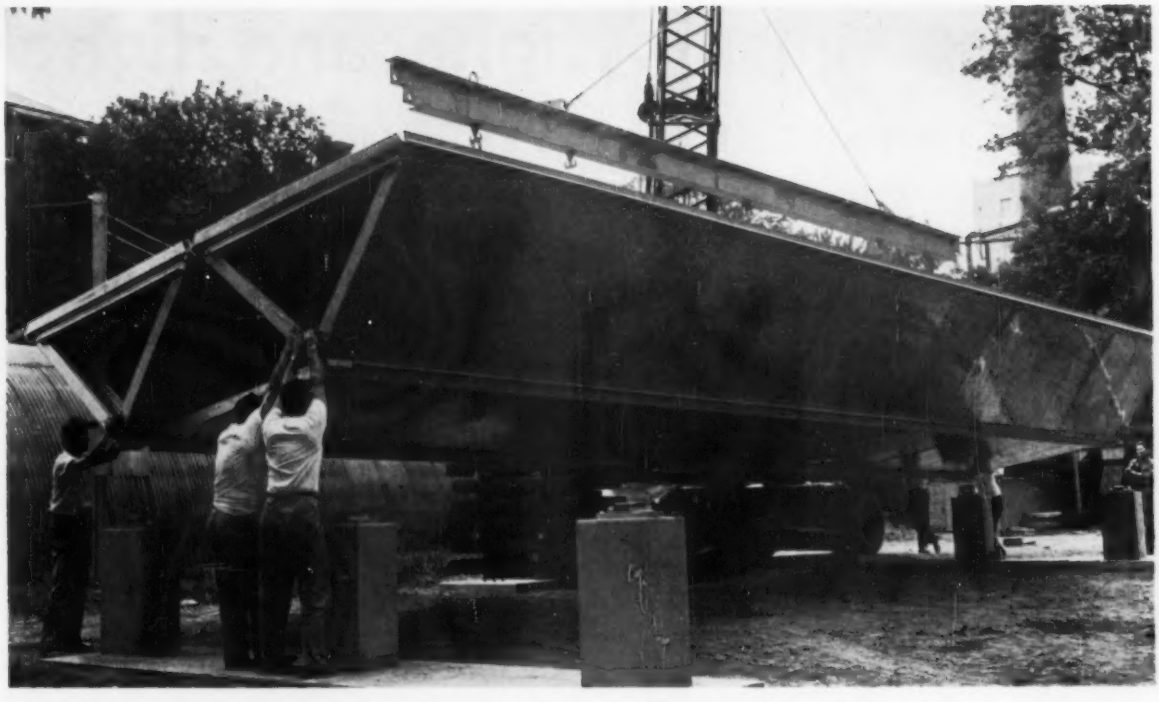
More on the Move—Curiously, despite the demand, there are now more executives than ever before looking for new jobs. Handy Associates report an increase of 70 pct over last year in executives submitting resumes to their offices. This is felt due to three reasons:

(1) General belt-tightening has caused layoffs at all levels; (2) shelving of expansion plans has blocked potential avenues of promotion; and (3) lower activity has sharpened latent dissatisfactions and uncertainties.

Companies handicap themselves in the executive manhunt, the experts emphasize. Inadequate compensation, particularly in tax-sheltered rewards is a common shortcoming, as is failure to make all aspects of the job equally attractive. Again, many companies fail to offer enough opportunity for advancement or even partial ownership.

Executive Hiring—
It's a Two-Way Street

The Company Looks For:	The Executive Wants:
1. Drive	1. Better Salary
2. Responsibility	2. Better Tax Break
3. Sound Judgment	3. Opportunity for Growth
4. Ability to Communicate	4. Good Executive Partners
5. Ability to Get Along with Others	5. Sound Company Managemennt
6. Health	6. Location Where Families Can Live Happily
7. Character	



FAST: Four men and a crane operator put up a 50-ft Fairchild Bridge at Lehigh U. in less than two days.

Aluminum Bridge Is Competitive

▪ It will be some time before Fairchild aluminum bridges become a part of our highway system. But if they do, it will mean a big, new market for aluminum fabricators.

The bridge was developed by Fairchild Engine and Airplane Corp., along with the Big 3 domestic aluminum producers, and Olin Mathieson. The first one is being tested by Lehigh University.

Aircraft Techniques — Basically, the idea was to apply aircraft building techniques to make an aluminum bridge that would be competitive on initial cost with steel.

Father of the project, Alfred A. Gassner, general manager and chief engineer of Fairchild's Kinetics Div., says flatly they have succeeded. His grounds for comparison are cost figures for existing steel bridges.

Right Conditions Needed—However, Mr. Gassner admits his calculations depend on spans being 75 ft or longer, and enough of them per contract to get the economies of mass production.

How big will the market be? The 50-ft section being tested at Lehigh weighs 11,300 lb. Estimates in the Federal highway program of 1956 are that 60,000 to 70,000 bridges will be built or rebuilt by 1970.

Big Plans — Fairchild has some patent applications pending on their bridge. But the company will not attempt to hug this new market to its bosom. The reason: They want their new pet to be used in the Federal highway program, and the government does not like to spend its money where exclusive or proprietary interests are involved.

The whole picture points to a very competitive market in the not too distant future. As one aluminum sponsor put it, "Any fellow with a large garage and 20 men can put these bridges together."

Need Federal Specification—The next step is to get a Federal specification that will cover the Fairchild aluminum bridge, so it can be bought with Federal money. The joint sponsors have been keeping in close touch with the Bureau of Public Roads. E. L. Ericson, of the Bureau of Public Roads, says he intends to develop design criteria when the Lehigh testing is completed. He expects quick action by the Bridge Committee of the American Assn. of State Highway Officials.

Mr. Gassner and his engineering team are happy with their bridge, but they do not consider this the ultimate in aluminum bridges. They are now working on a post tension approach, which Mr. Gassner says will give even better performance at lower price.

Boring Mills Go Higher and Higher

Sales for Elephant Tools Are Also on the Upgrade

Bigger workpieces to be machined indicate the upward trend in vertical boring mills.

Baldwin-Lima-Hamilton is reaching for the ceiling with new units. Other design trends develop with emphasis on height.

▪ Elephant machine tools are up in more ways than one these days. In contrast to the rest of the industry, the elephant sales are 10 to 20 pct above last year and buyers are taking advantage of prices about 10 pct lower.

The other upward trend is in height of vertical boring mills, most common breed of elephant tools.

On one new vertical boring mill now being built, the tools will clear the table by 20 ft. On other new ones, 14 ft and more is not uncommon compared to being about maximum several years ago.

Doing Bigger Work—Basic reason is that bigger and bigger workpieces are being machined. If one unit is big enough to handle it, fewer setups are necessary and fewer hours lost.

Inside machining can be more easily done in a vertical position and with the same set-up. To make the same cut on a 20-ft. piece horizontally would require about a 10 to 16 ft. lathe. About the largest known is 12 ft. Horizontal chucking also may cause sagging on bigger pieces, making close tolerance work tough. The 20-ft unit will be used to machine boilers for atomic power installations.

Higher than Wider — "We are now building the highest vertical boring mill in our history and it is indicative of a new trend," says George Lynn, general sales manager of Baldwin-Lima-Hamilton's Hamilton Div., builders of Niles tools in Hamilton, O.

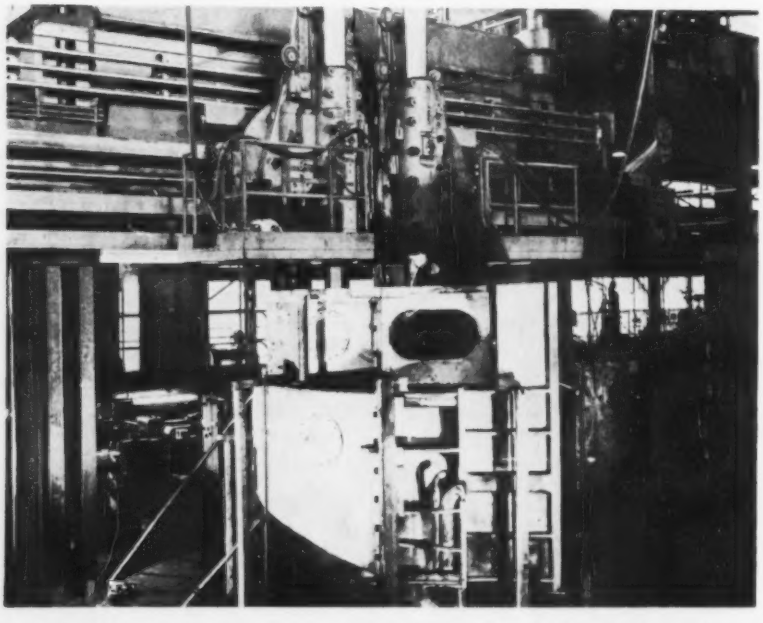
"This new mill will have more height than width. Tools will clear the table by 20 ft. while table diameter is 16 ft. Another unit recently built has a 20 ft. table with 14 ft. under the tools. The height also adds weight to the machine because of heavy cross bracing behind the frame. The 20 ft. table unit will weigh about 250 tons."

Means Design Changes — Another elephant tool maker confirms the trend toward higher vertical boring mills. L. T. Jefferis, Jr., sales manager of Consolidated Machine Tool Div., Farrel-Birmingham Co., Rochester, N. Y., says that his firm has built several mills with consistent increases in height under the crossrail.

The skyscraper trend in tools is also causing changes in design of the tools. Higher loads are heavier loads and don't slide easily. So Baldwin-Lima-Hamilton's new 16 ft. unit will have ball bearings under the table instead of the usual sliding track. The table will carry 150 tons load at about 25 rpm. so a very large bearing is necessary.

Bearing supports of the previous era were cast iron over cast iron and heavy pressure lubrication. As table loads went up, bearings went successively through cast iron on bronze, hardened steel on bronze, and aluminum alloy on cast iron. The ball bearing is just around the corner.

Elephant tool makers are also picking up odd jobs to keep shops working. B-L-H, for instance, is now turning out a series of guided missile "cocktail shakers to test missle guidance systems.



MAMMOTH MILL: An example of the trend to higher boring mills is this 24-ft Hamilton vertical boring mill. As Blaw-Knox's Foundry and Mill Div., it is performing internal boring and facing of a turbine casing.

precise heat for precision casting

You'd *expect* the accurate heat of an induction furnace to be an important consideration in permanent mold, shell mold, and investment casting . . . and it *is!* But in addition to precise temperature control, Ajax-Northrup high frequency induction furnaces provide the precision foundry with *flexibility*, *purity*, and *economy*. That's why Ajax leadership in melting for precision casting has never been challenged.

One furnace—hundreds of alloys: Ajax-Northrup furnaces can handle any one or all of the hundreds of ferrous and non-ferrous alloys being made today. For many alloys, it's the only furnace that *can* be used. Magnet alloys, for example, depend on the inherent stirring action which assures ideal dispersion of all elements throughout a melt . . . and the most uniform possible cast part analysis.

Pure metal protects part quality: There's no flame, no smoke, no physical contact between coil and metal. Melts are always 100% on analysis, because there's no chance of contamination . . . particularly important when you're dealing with the finicky alloys common in precision casting.

A better melt at a lower cost per melt: Because every melt is uniform and to exact composition, bad melts become a thing of the past. Subsequent machining is minimized. Ajax-Northrup's unique control system assures maximum melting efficiency—lower melting costs. And new, compact designs minimize floor space requirements, installation costs and maintenance.

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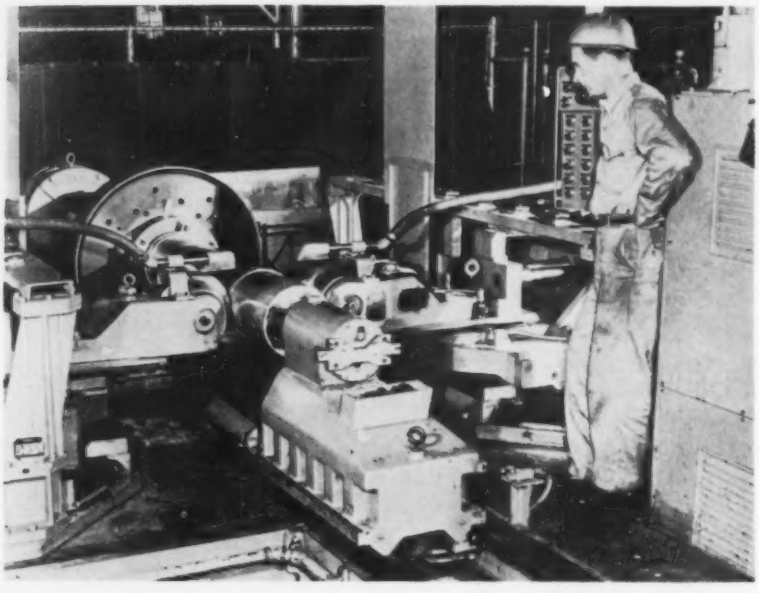
Available in every conceivable capacity from a few ounces to several tons . . . powered by massive motor-generator sets or economical converters . . . there's an Ajax-Northrup induction furnace sure to satisfy your needs perfectly. We'll gladly send you further information or, if you wish, arrange a meeting with qualified furnace engineers to discuss your special requirements. Ajax Electrothermic Corporation, Ajax Park, Trenton 5, New Jersey.

ASSOCIATED COMPANIES: AJAX ELECTRIC COMPANY-AJAX ENGINEERING CORPORATION

USS Introduces Airsteel Designed for Missile Age



ULTRA HIGH-STRENGTH: Airsteel X-200, ultra-high-strength alloy sheet steel developed by U. S. Steel, is hydrospun at Corporation's Western Steel Division. New steel was created after two years research to solve welding and fabricating problems found in rocket and missile construction. It's available in billets, blooms, bars, plates and sheets.

Procurement Revision

Air Materiel Command officials have announced major changes in the organizational structure of the Directorate of Procurement and Production.

The changes, which will take place over the next six months, involve physical separation of staff elements from operational elements within the Directorate.

Defense Force Limits

Congress will be pressed by the Eisenhower Administration in the next session to repeal restrictions on reductions in defense manpower. While the President feels funds granted by Congress for military programs were adequate, he objects to a budget law provision putting a floor under Army National Guard, and reserve strength.

The Defense Dept. had intended shrinking these forces in keeping with the new policy of dependence on weaponry rather than unit strength. Congress, however, prescribed that the National Guard be kept at about 400,000 and reserve manpower at 300,000 men. These mandatory minimum strengths waste money and resources, Mr. Eisenhower contends.

Fabricated Steel Gains

Bookings of fabricated structural steel in July hit the highest level in 14 months, according to the American Institute of Steel Construction.

Fabricator orders were for 330,890 tons of steel during the month, compared with a monthly average of 214,000 tons since the recession hit the industry in June, 1957.

The July gain marked the seventh consecutive month sales have increased, the AISC noted, and reflected the sharpest recovery ever registered by the construction industry.

July fabricated structural steel bookings for bridges and buildings climbed 135 pct over the December, 1957 low of 140,000 tons.

New Reynolds Building

Reynolds Metals Co.'s new headquarters, in Richmond, Va., is a real showcase for their product. It contains over 1.2 million lb of aluminum.

In addition to the usual hardware and panels, it boasts aluminum office furniture, and aluminum yarn draperies and carpeting.

The four-level structure also has the world's largest system of automatic sun louvers. The 880, 14 ft x 22 in. sun shields are geared to a clock which will anticipate the sun's movement through the year 2100.

The building, and 160 acres, cost Reynolds $11.5 million.

Foreign Aid May Grow

Loans from the U. S. to underdeveloped foreign countries are likely to be fatter in coming months than they were a year ago.

Congress, before adjournment, voted to appropriate $400 million for the development loan program. Last year the amount provided was $300 million. And, besides the loan-program funds this year, Congress called for $200 million to be used at the President's discretion for special economic aid abroad.

Both amounts agreed to at the recent congressional session are part of a foreign aid appropriation of nearly $3.3 billion. President Eisenhower failed to get the $3.95 billion he requested for direct and indirect military aid and economic assistance programs. But he was understood to be reasonably satisfied with the results.

This year the lawmakers gave the development loan program funds an elevator-ride treatment. The House would have held the amount to $300 million, the amount appropriated last year. But the Senate called for a rise in funds to $580 million. Then leaders from both chambers worked out the accepted $400 million figure.

OPERATION up turn — buy now for extra values — GENERAL ELECTRIC

COMPUTER PROGRESS

Digital and Analog Computers at Work

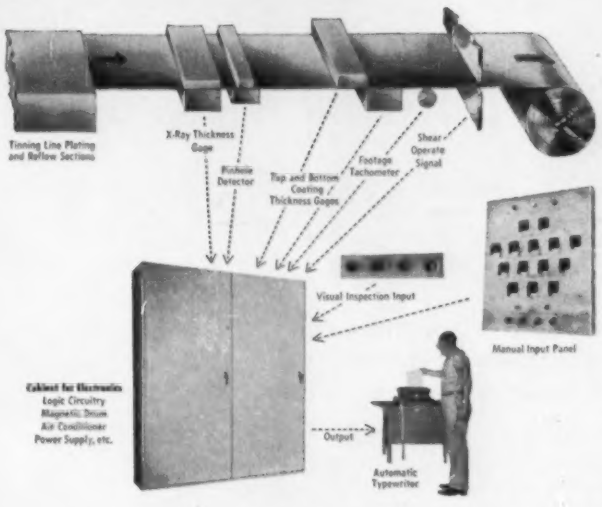
ARTICLE 3 VOLUME 1

SOLVING A TINPLATE INSPECTION AND BILLING PROBLEM WITH MODULAR COMPONENTS

The trend towards purchasing tinplate direct in large coils rather than in sheets brings about a change in inspection techniques. No longer is it possible to separately inspect each sheet; instead, inspection must now be done at line speed on the delivery end of the tinning line. As complete coils of tinplate will now be shipped to the customer, steel companies will need permanent, accurate defect records.

General Electric is now solving this problem for several tinplate producers by *automating* their data logging with the new Model 302 Automatic Inspection Data Accumulator for Tinplate. This system provides a complete, typewritten record for quality control and billing purposes immediately upon completion of each coil.

Unlike many computers installed in factories, the G-E Data Accumulator is designed specifically for an industrial environment, not for office use. Modular electronic units are mounted on strong, 3/16 inch metal frames in completely enclosed cabinets. The all-transistorized plastic coated printed circuit plug-in cards are easy to repair; maintenance costs are reduced since cards may be re-



used, and spare parts stock is kept small.

In addition, an exclusive new magnetic drum application cuts out approximately 60% of previously required electronic gear. Not only does the reduction in complexity increase reliability, but the space and dollar saving also allows sufficient duplication of circuitry for constant cross-comparison of data. Preventive maintenance can be performed on one section while the other continues to log data. Magnetic storage also eliminates the danger of losing stored data if power fails.

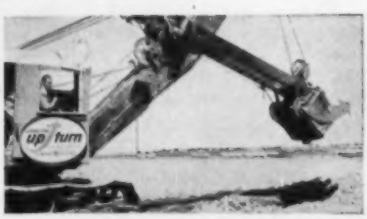
ONLY 8 HOURS INSTRUCTION REQUIRED TO OPERATE PRODUCTION SCHEDULING COMPUTER

The new G-E 306 desk-size analog computer, designed to solve office and factory production and business problems, can be operated by the average clerical worker after only 8 hours instruction.

The computer is used wherever multiplication of a number by each of fifty coefficients and the summing of the results is required. Up to twenty-four such numbers may be multiplied with one setting of dials. Manufacturing problems such as production scheduling, materials explosion and work station load impact studies, as well as business problems like budget syntheses and operating reports (or any other first order linear equation problem) may be solved.

A typical solution takes only 2 minutes. The unit operates on 115 volts.

COMPUTER DEPARTMENT LAUNCHES OPERATION UPTURN WITH NEW MILLION-DOLLAR PLANT IN PHOENIX, ARIZONA



General Manager H. R. Oldfield, Jr., is pictured at the controls of the Operation Upturn steam shovel which recently broke ground for the new 104,000 square foot permanent plant which is expected to be completed by December of 1958.

"Our business is good and getting better," Oldfield said. "We're going to continue to expand during the year, adding perhaps a hundred or more people." The department now has over 800 employees.

The 160 acre site is located in Deer Valley Park, northwest of Phoenix along the west side of the Black Canyon Highway and south of the intersection with Thunderbird Road.

For more information, contact your nearest General Electric Apparatus Sales Office, or Computer Department—Room 102, General Electric Company, 1103 No. Central Avenue, Phoenix, Ariz.

CPA—9

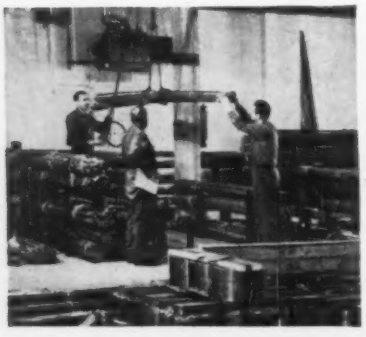
Progress Is Our Most Important Product

GENERAL ELECTRIC

BRIDGEPORT BRASS

COPPER ALLOY BULLETIN

Bridgeport Reporting New Developments in Copper-Brass Alloys and Metalworking Methods



USE BRIDGEPORT'S WAREHOUSE STORES FOR FAST SERVICE

As close as your phone . . . Bridgeport's supply network puts brass, copper and aluminum mill products within easy reach. With 7 plants and 11 warehouses, strategically located throughout the country, Bridgeport can give you fast, efficient service on any need, large or small. As a result, your inventory and ordering problems are simplified, your production schedules more easily met. Try Bridgeport's "Johnny-on-the-spot" service next time you need brass, copper and aluminum. It will save you time, trouble and money. For prompt deliveries, call the warehouse nearest you:

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CEdar 1-5180

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MAin 3-0273
AComa 2-4108

Los Angeles 22, Calif.
6500 E. Flotilla Street
RAymond 3-5101
PArkview 1-5171

Minneapolis 15, Minn.
124 12th Ave., South
FEderal 9-7061

Newark (Hillside), N. J.
1240 Central Avenue
Bigelow 3-0044

New York, N. Y.
48-49 33rd St. (L. I. City)
EXeter 2-4290

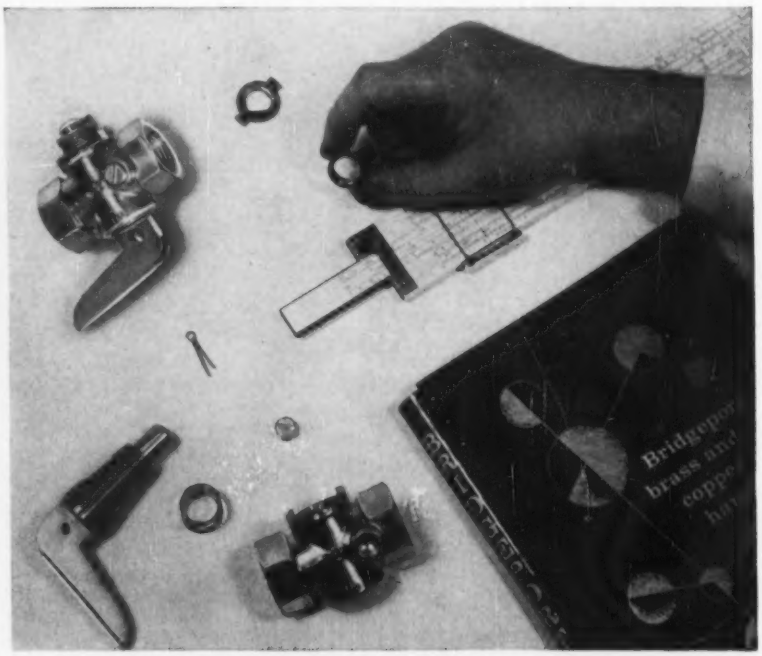
Philadelphia 24, Pa.
918 E. Lycoming St.
JEfferson 5-3900

Providence 5, R. I.
177 Georgia Avenue
Williams 1-2100

St. Louis 3, Mo.
2135 Delmar Blvd.
CEntral 1-0076

San Francisco 3, Calif.
130 Potrero Avenue
UNderhill 1-2551

Bridgeport also maintains Sales Offices in principal cities. Check your local directory for address and phone number.



Every Product Should Take Advantage of Today's Favorable Cost of Solid Brass

Of all the qualities that recommend brass for finished products and parts, price is now one of its most attractive.

Price—a vitally important element in any product—puts brass within immediate reach of all manufacturers who find that quality, cost and availability are essential to the success of *their* products or parts.

Consider these advantages offered to you now by Bridgeport as a prime supplier of copper and brass:

1. A newly installed Sendzimir Mill and continuous strip annealer that deliver high-quality brass strip under close gage and grain size control.
2. The inherent superiority of solid brass over other metals. Beauty, luster, life and color of polished or plated brass are incomparable qualities.
3. The value of brass scrap as a final cost factor—brass scrap enjoys a healthier return than steel or stainless.
4. The higher production rates and longer tool life that result from working with brass.

Behind this is Bridgeport's Technical Service ready to help you in problems of selection, application and fabrication. Take advantage of it. Your Bridgeport Salesman is the man to see. Call him today.

BRIDGEPORT BRASS

Bridgeport Brass Company, Bridgeport 2, Connecticut • Sales Offices in Principal Cities
In Canada: Noranda Copper and Brass Limited, Montreal

Henry M. Heyn

Selling His Team on Teamwork

Mr. Heyn's outstanding record as an engineer, manager, and salesman got him to the top in the furnace industry.

He uses his selling aptitude to put across modern management ideas in his own company.

■ Back in '22 when the industrial furnace industry was in its infancy, a young draftsman took his place behind a drawing board at Surface Combustion Corp. in Toledo, O. During the next 36 years, Henry M. Heyn was to take part in most of the major developments in the furnace field.

Although no run-of-the-mill board man (he was promoted to chief draftsman), Henry Heyn eventually found his calling in an altogether different occupation. Trading his drawing instruments and triangles for a sales kit, he soon became Surface Combustion's star salesman. Today, he is president of the firm. On the way up he was, successively, district sales manager, sales manager of the Heat Treat Div., vice president and general manager of the Industrial Div.

A New Breed—Like many of the current crop of good salesmen, Mr. Heyn is not big, brash, and blustery. He's quiet in manner, sensitive to the feelings of others. Though the company he heads may be among the largest at a trade association meeting, he usually waits until others have spoken before offering his suggestions.

These traits have won him many friends among customers and business associates—and have in no small way contributed to his successful "teamwork" concept of management.

HENRY M. HEYN: We grow only through teamwork.

His Business Credo—Today, Mr. Heyn uses his creative sales ability to sell modern management ideas. This indirect selling, he finds, has a way of selling "Surface" to American industry.

Says Mr. Heyn: "We know that in this highly competitive industry we can only maintain our position when we continue to develop, engineer, and build the type equipment worthy of our fine tradition.

"This means we have to pool the best of our talents to form a team to meet each challenge. We grow only through teamwork and, in so doing, make our contribution to mankind."

Relies on Committees—Mr. Heyn practices what he preaches. He delegates authority to his people, using staff and committee meetings as sounding boards for policy decisions. In this way, he is able to keep his fingers on the pulse of his diversified organization.

Apart from industrial furnaces, his company's three divisions produce such varied products as glass lehrs, dehumidification systems, aircraft heaters.

In the Field—His outstanding leadership qualities, the ability to think on his feet and to quickly analyze problems, have made Mr. Heyn a spokesman for the furnace industry in many professional and civic organizations.

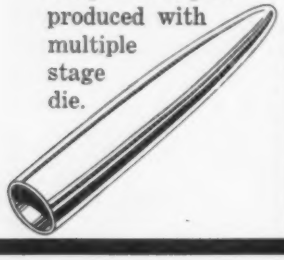
FOR OPTIMUM RESULTS

J&L STRIP STEEL DIVISION

restricted specification cold rolled strip steel

Oftentimes, sound selection of cold rolled strip steel should involve more than making a choice of one or more readily available, standard specifications. To achieve best fabricating results, or to improve manufacturing performance and end-product superiority, may require the employment of strip steel specially designed for your particular use. J&L Restricted Specification Strip Steel is that kind of product. As an example look at this . . .

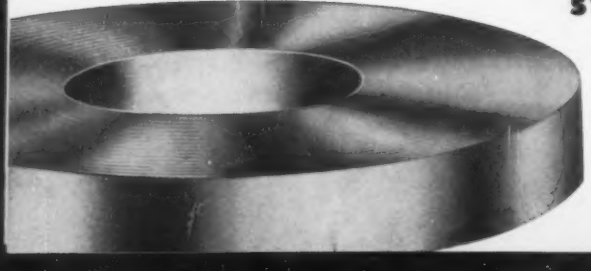
TYPICAL APPLICATION . . .

product	specification	results
Deep drawn part produced with multiple stage die. 	Low Carbon Deep Drawing Steel Size—3″ x .010 Analysis—AISI—1010 Temper—Deep drawing, non-scalloping Finish—#2 Tolerance ± .0002 including crown Width Tolerance ± .002 Coil Size—250# per inch width min.	Improved yield. Improved die life. Reduced finishing operations after drawing. Less quality control cost.

J&L STAINLESS AND STRIP DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:

Low Carbon	Electrolytic Zinc, Tin, Copper & Brass Coated
High Carbon	Alloy
Tempered Spring Steel	Stainless
Molten Zinc Coated (JalZinc)	Painted

The experience, facilities and accumulated know-how of a specialized organization devoted exclusively to strip steel processing are available to work with you. In this clearing house of strip steel engineering and application information, it's a good bet there is something of value for you. Your inquiry will get our immediate, interested attention.



STRIP STEEL

Jones & Laughlin
STEEL CORPORATION
STAINLESS and STRIP DIVISION
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FORMERLY THE COLD METAL PRODUCTS COMPANY

Where Does All the Money Go?

It's obvious that metalworking firms aren't getting their full share of consumer income.

Expenditures for durable goods have fallen off steadily since mid-1955. But at last there are some reasons for optimism.

■ The hard-pressed metalworking executive has reason for frustration. He reads that personal income in July went above last summer's high. He looks at his set of economic indicators and sees personal spending running at least equal to a year ago.

Yet his own business may be really scrambling for what appears to be a smaller number of customers. While he has confidence in a good comeback, the figures just don't add up to him.

Buying Power Down — For one thing, higher living costs have put purchasing power under a year ago, despite the rise in dollars. For another thing, some of the elements that make up personal income are artificial—government payments for unemployment or social security, for example.

The increase in farm income, higher wage rates, and continued dividend payments in spite of lower corporate profits keep income up—even climbing.

Missing Out — Yet the metalworking executive has to look at the pattern of consumer expenditures to find out what is wrong with his business. In spite of a more or less steady climb of personal spending, the durable goods industries have not shared in the spending.

Spending for durable goods reached $39.6 billion dollars in 1955. For the second quarter this year, spending for durables was going along at a seasonally adjusted annual rate of only $35.6 billion.

In contrast, for the same interval, spending rates of nondurables rose from $124.8 billion to $141.4 billion; spending for services climbed from $92.5 billion to $111.3 billion.

Reason to Hope — In fact, with the exception of early months of 1957, durables have been in a steady, although slow, decline since mid-1955.

The best that can be said on the basis of available statistics is that durable goods sales had at least leveled out in July.

There is some good reason for optimism, however. Appliances are starting to move, at retail and factory levels; the auto market just has to pick up; and an improved construction outlook, particularly in large buildings, is going to help a lot. The farmer's improved outlook, which has been observed for some time, is helping in some sectors.

Survey Shows 2nd Half Hopes

Tough on Metalworking — The durable goods lag is probably responsible, to a large extent, for one of the significant conclusions of a National Industrial Conference Board survey.

This survey indicates that companies not in the metalworking field are generally more optimistic about second half prospects than metalworking firms.

Fewer Optimists—A full 68 pct of the non-metalworking companies expect to bill more goods in the second half of this year than in the first, compared with 47 pct of the metalworking group who might be classed as optimists.

Some overall conclusions of the NICB survey:

Dollar value of new orders during the second half of the year is expected to improve over the first half by 61 pct of reporting companies; 22 pct forecast no change and 17 pct see even slower business.

Production Boosts Planned — Measured against second half, 1957, the comparison is not so good. Only 36 pct see improvement in orders over a year ago.

One half of the survey group plans to increase output in the second half; one fourth to decrease.

Inventory Policies Still Fluid

On the all-important inventory question, dollar value of inventories has been cut since the beginning of the year by 54 pct, with a surprising 30 pct reporting increased inventory investment.

But a majority expect their inventories to decline in the second half, with 17 pct planning to increase them above the mid-1958 level.

This also appears contrary to observed industry trends. It probably is accounted for by the surprising surge in business strength in August, and reflects determination that was present at mid-year to cut inventories to the bone. This has since changed in many significant areas.

AUTOMOTIVE

Auto Buyers Turn Conservative

Family Sedan Sales Show Gains, Sports Cars Drop

The auto industry hasn't decided yet if the reversal in trend is permanent.

As the economy recovers from the recession, flashy models may bounce back into demand again.—By H. R. Neal.

▪ Auto buyers in 1958 have presented automakers with an interesting trend to ponder as they turn away from one model year toward another—they've become more conservative.

For the past several years more and more customers have been taking the brightest bait offered by the auto industry. But they've shown a reversal of form during the first half of recession-riddled 1958. It looks as though the "sports" deserted the market place and were replaced by "family-type" customers.

Extras Still Popular—To be sure, customers this year are still going for extra cost items. Accessory and optional equipment sales, as reported previously, are better than ever. And it looks as though many of these items will continue to go into more cars until they eventually become standard equipment, particularly automatic transmissions and even radios and heaters.

However, the auto buyers' trend toward "conservatism" is made up of several other trends. In the first half of this year foreign cars snared some 6.7 pct of all U. S. sales. Most of these are small "economy" type vehicles.

Medium Range Suffers—Sales of medium price U. S. passenger cars declined to around 27 pct of sales of U. S.-built cars. A year ago they still commanded better than 32 pct.

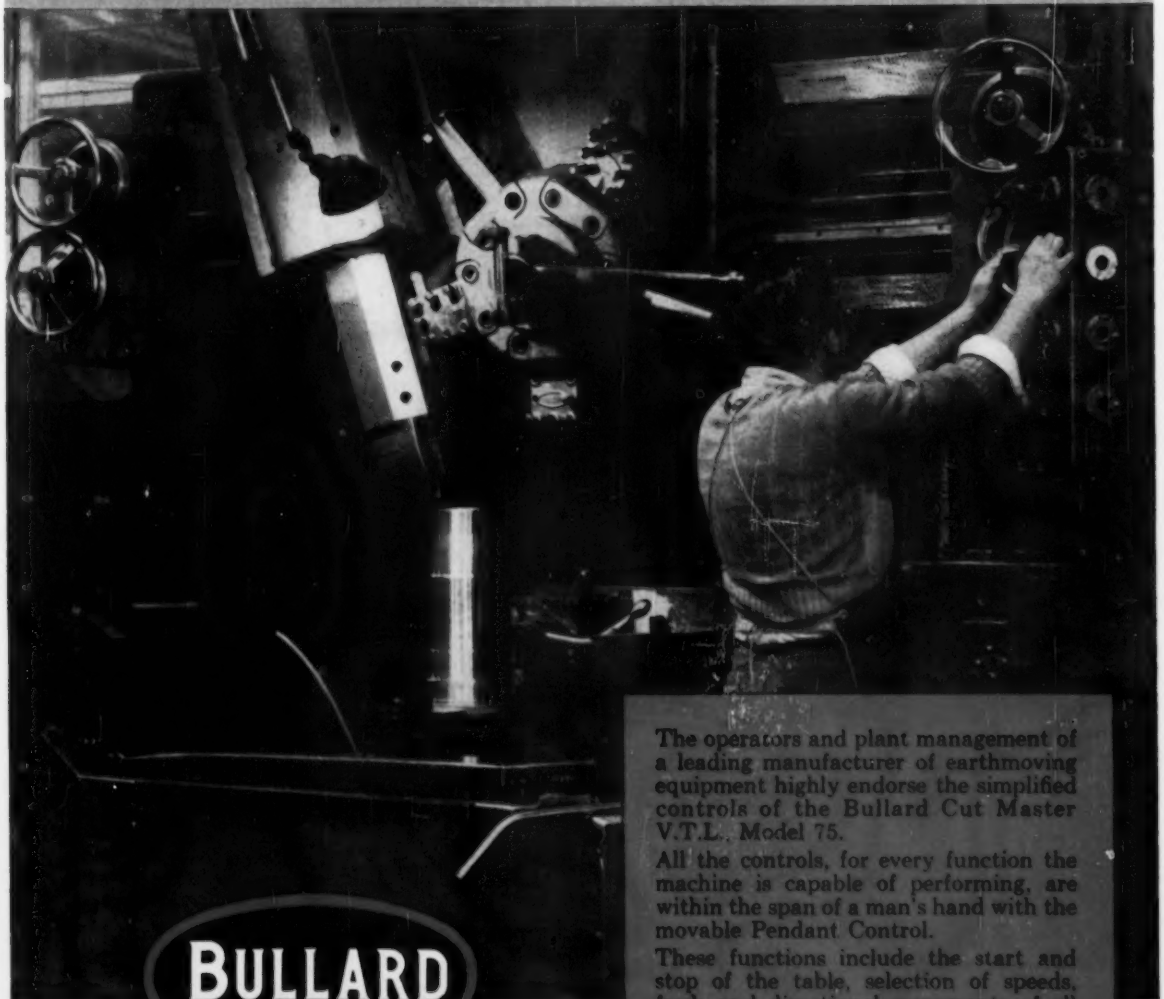
Car buyers have become "economy" minded as their buying habits turn conservative. This is true not only of purchasers of cars in the low price class but even of those in the medium price class. Dodge, which still offers a six-cylinder engine, reports demand for its "six" jumped to 9.7 pct of its sales in the first six months of this year. A year ago it commanded only 4.6 pct.

Buyers Get Practical—But there

Swivel Seats—Chrysler's Newest Driver Comfort

GRACEFUL EXIT: Chrysler Corp. is first of the major automakers to come out with swivel seats for easy exit and access to 1959 cars. A touch of the lever, an easy swing, and your feet are on the ground.

Simplified Controls win enthusiastic approval



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The operators and plant management of a leading manufacturer of earthmoving equipment highly endorse the simplified controls of the Bullard Cut Master V.T.L., Model 75.

All the controls, for every function the machine is capable of performing, are within the span of a man's hand with the movable Pendant Control.

These functions include the start and stop of the table, selection of speeds, feeds and directional movements of all heads in feed or traverse.

This feature, a Bullard exclusive, improves the efficiency of the operator and increases production.

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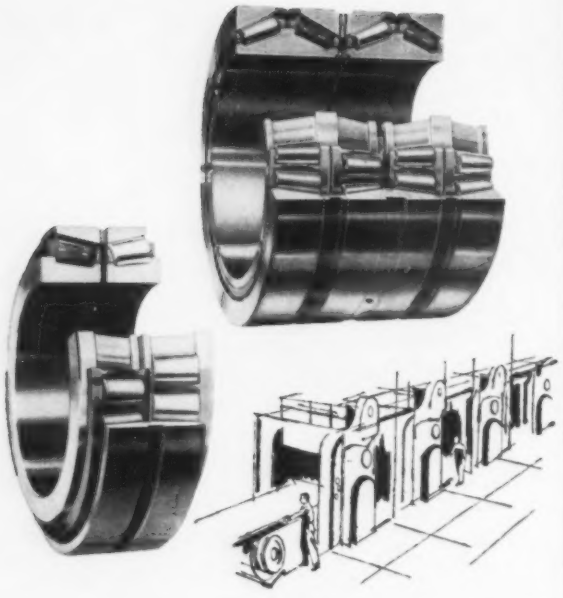

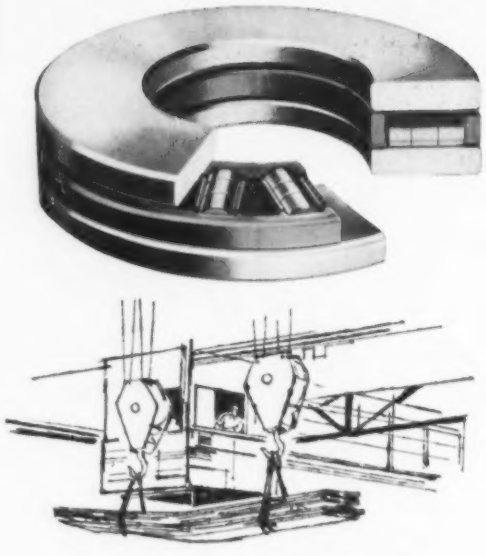

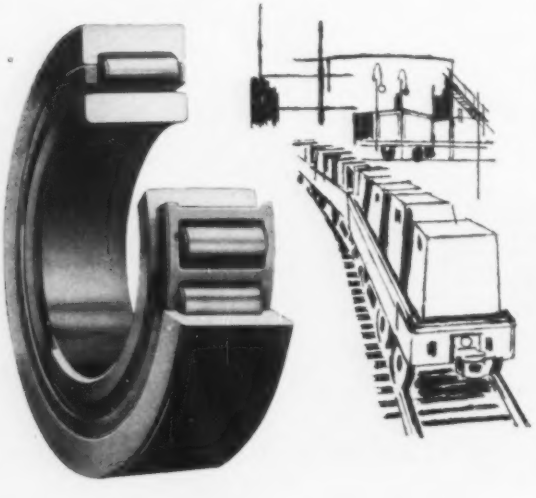

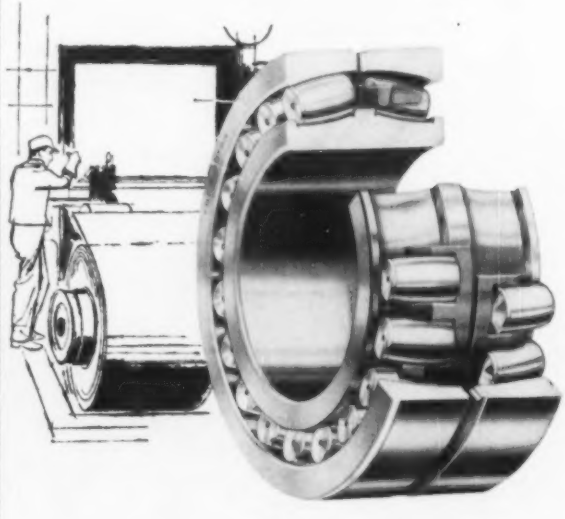

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Torrington offers every basic anti-friction bearing to meet specific requirements of steel mill applications . . .

TORRINGTON ROLL NECK BEARINGS, two-row and four-row, solid and pin-guided tapered roller, for every type of service in work roll, back-up roll and back-up thrust applications.

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In every detail of design, construction and metallurgy, you'll find each Torrington Bearing unmatched for performance and service life. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 30, 1958	16,432	8,037
Aug. 23, 1958	25,918	8,895
Aug. 31, 1957	118,553	20,915
Aug. 24, 1957	123,130	20,491
TO DATE 1958	2,743,200	561,200
TO DATE 1957	4,394,900	761,000

*Preliminary Source: Ward's Reports

is still more evidence 1958 car buyers have returned to considering the more functional purpose of the automobile—transportation.

Sedans, which for the past few years have seemed a sure bet for oblivion before too many more years, have retaken some of the ground lost to hardtop models. And this despite the fact many car makers don't offer sedans through their entire series range.

First half figures just released by the Automobile Manufacturers Association show two-door sedans moved back up to second place in popularity from a fourth place position last year. They accounted for 17.5 pct of factory sales, compared with 14.5 pct during the first six months of 1957.

Four-Doors Lead—At the same time, four-door sedans extended their lead over all other body types as they increased from 31.5 pct to 35.8 pct this year. Sedans of both types dominated the market, with a combined share of 53.3 pct of factory sales.

Station wagons, the other type noted as a functional, family-type vehicle continued their upward trend in popularity. Four-door station wagons climbed from fifth to fourth in popularity as they increased their share of sales by 1.5 pct to a total of 12.5 pct.

However, a decline in sales of the less convenient two-door models, from a 3.2 pct first half share a year ago to 2 pct this year, held total gains for the body classification to 0.3 pct—14.6 pct against the year earlier 14.3 pct figure.

Hardtop Sales Off—It has been the stylish hardtops, symbols of prestige and carefree motoring, that have taken the beating.

The two-door hardtop has been dumped into third place as its share has dropped from 18.6 pct last year to a present 15.8 pct. And the four-door hardtop has fallen two positions to fifth from last year's solid third as popularity with customers has slipped from 15.9 pct a year ago to a present 11.4 pct.

This popularity loss becomes even more dramatic when viewing the two types of hardtops together: 34.5 pct in 1957, only 27.2 pct in 1958.

Convertibles, the remaining classification, have lost only a slight amount of ground and account for 4.6 pct of present sales, compared with slightly less than 5 pct for the same 1957 period.

Pontiac Set for '59 Sales Battle

Semon E. Knudsen, general manager of GM'S Pontiac Div., introduced the company's 1959 model cars with the candid admission: "My predictions for 1958 went to pot." Gone, for 1958, were dreams of fourth place in the industry.

But with new models to sell in a new model year, Mr. Knudsen set a more conservative goal for 1959—7 pct of the total auto market, which he estimated "should settle in the area of 5.5 million." Pontiac's present share: 5.2 pct of a market expected to be under 4.5 million.

Longer, Lower, Wider—To get a larger share of the hoped-for larger market Pontiac has scrapped its 1958 models entirely. The honestly-all-new Pontiacs will be longer (by 6 in.), lower (by a maximum 3 in.), and wider (by a substantial amount in tread width).

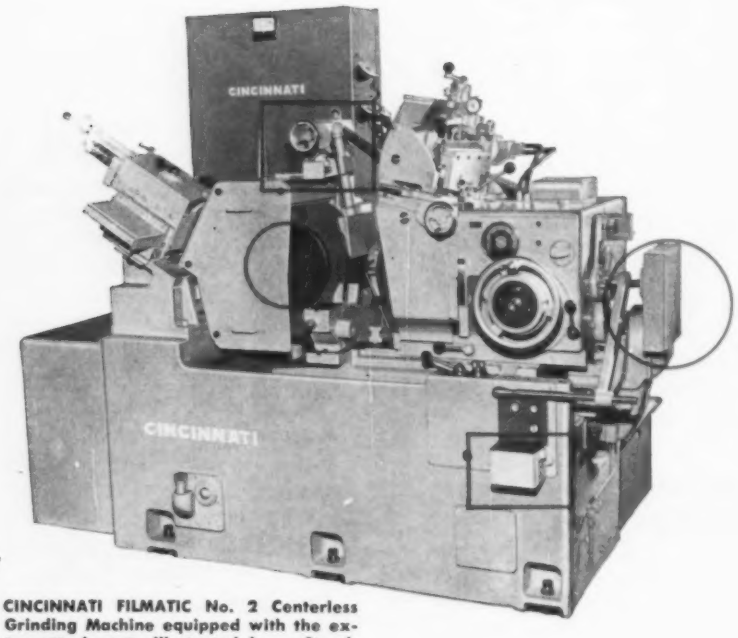
Greater glass area, with several rear window treatments, will give the cars a wide open look. And the nearly flat roof is only obvious when you look down on it.

While horsepower will be up—to 300 hp, it will also be down—to 225 hp. For those who are willing to sacrifice performance (a little pick-up and top speed) an economy V8 engine will be available at no extra cost.

THE BULL OF THE WOODS

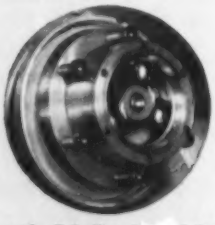
LOOK WHAT'S NEW

in Low-Cost Centerless Grinding



CINCINNATI FILMATIC No. 2 Centerless Grinding Machine equipped with the extra attachments illustrated here. Standard machine catalog No. G-644-4.

New Spindle End Adjustment Unit with dial indicator. For quick, accurate axial adjustment of grinding wheel spindle, when setting up for infeed grinding operations. ⅛" total adjustment available.



Automatic Grinding Wheel Balancing . . . an exclusive feature. Freely rotating steel balls automatically balance the wheel mount when unclamped. Perfect balance is attained in a few seconds. Ask for demonstration.

New Precision Indicator Attachment for taper correction. Provides a visual check on the amount of regulating wheel unit swivel adjustment, measured in increments of .000010" per inch. Top of unit shown here.

New Vari-Pitch Unit for hand infeed grinding. A simple change gear arrangement gives the operator a choice of three throat openings for maximum safety and convenience in loading infeed work.

. . . New Types of Equipment now available for CINCINNATI FILMATIC Nos. 2 and 3

In addition to the many advantages offered by the new CINCINNATI Centerless Attachments and extra equipment illustrated here, the machine itself will give you far superior performance because of FILMATIC grinding wheel spindle bearings . . . anti-friction infeed slide . . . infinitely variable regulating wheel speeds . . . quality controlled castings. Cincinnati is tops for your replacement program; for producing your new products; for engineering service. Preliminary information in Sweet's Machine Tool File.

Grinding Machine Division

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CENTERTYPE GRINDING MACHINES • MICRO-CENTRIC GRINDING MACHINES
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GRINDING MACHINES • CHUCKING GRINDERS • CENTERLESS LAPPING MACHINES

Red Export List Coming Soon

Commerce Dept. Goes Slowly, Ponders 200 Items

In a matter of six to eight weeks the revised U. S. export control list will be issued.

In the meantime, exporters should begin filing for licenses. —By G. H. Baker.

▪ We'll soon know just what metals and what types of machinery may legally be shipped to Communist countries. Under the liberalized export-control rules agreed to recently by the U. S. and other Free World nations, a substantial pickup in trade with Red areas is in the offing.

The U. S. Department of Commerce has undertaken an item-by-item review of the several hundred commodities and products which, up to now, have been barred from shipment to Red countries. Each item on the list is being discussed separately by the bureaucrats, and separate decisions, such as "OK for export," or "No export," are being arrived at daily.

Six-Week Wait—But it's a slow process. More than 200 items are involved, and the wheels of bureaucracy turn slowly. The U. S. Department of Commerce believes that October 15 is the earliest date by which it can possibly have a complete list ready, and the actual date of publication of the list may be closer to November 1.

The new and liberalized list of items agreed to at the Paris talks by Free World representatives this summer is the starting point for the current Washington talks as to what U. S. exporters may and may not ship to Red countries. Washington's upcoming list probably will be more restricted than the new list agreed to in Paris.

In order to bridge the gap in time between now and the time the new list is published, the Department of Commerce advises exporters to go ahead and file their applications for export licenses (with the U. S. Department of Commerce) in order to obtain advice as to whether or not any particular item will be licensed for export under the new policy.

Advertising Tax Draws Fire

A storm is brewing over a government crackdown on business tax deductions for institutional advertising.

Business, industry, and publishers are protesting to Internal Revenue Service officials that the trend now building up to disallow these deductions as normal business expenses is a type of censorship.

They are also complaining that the policy, if continued, will rule out long-established advertising practices by businessmen.

There's a Law — Technically, IRS officials say they are simply enforcing a law that has been on the books since 1921 against tax deductions for advertising which is not a normal and necessary business expense. But the trend now, according to opponents, is to include only strict product or service advertising as meriting a deduction.

The law does rule out political advertising, propaganda, and other partisan activities.

Why Labor Is Worrying Over Politics

Union Brows Furrowed—Labor leaders are alarmed over management's recent political awakening. (See "Business Men Are Learning —It Pays to Talk Politics," The IRON AGE, Aug. 21, page 59.)

A West Coast AFL-CIO official (Pres. Clifford L. Williams of the Hanford, Wash., Atomic Metal Trades Council), charges that General Electric has "joined hands with other big companies in Washington" in urging a state right-to-work law.

Boeing Complaint — The AFL-CIO News (official organ of the AFL-CIO) says Pres. William Allen of Boeing Airplane Co. also is working openly in the state of Washington for a right-to-work law. Mr. Allen, the AFL-CIO charges, has advised his supervisory employees to sign petitions asking for a right-to-work law, and has asked each to get at least 100 additional signatures on the petitions.

All this is going to "undermine, weaken, and eventually destroy collective bargaining," the AFL-CIO declares.

It Proves Something — This growing concern of the union leaders demonstrates that management is making some headway in its new drive for political action. It also shows that management must be prepared to have some bricks hurled in its direction. But this only proves that the stakes are worth fighting for. And, conversely, what is gained without friction is usually not worth the struggle.

THE CASE OF THE PUZZLED ENGINEER

(A Cold Bonderite* Story)

The plant heating engineer, wondering at the diminished demand on his heating plant, set out through the plant to find the cause. All was normal until he met the finishing superintendent. "Haven't you heard?" asked that happy gentleman. "We've installed Cold Bonderite* in our finishing line. Steam use is down 90% and water use is down 50%!"

*"Cold Bonderite" is the commonly used term for a phosphate coating system developed by and exclusive with Parker Rust Proof Company. Its use is saving many manufacturers thousands of dollars a month.

Since 1914— leader in the field

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BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

Bonderite, Bonderlube, Parco, Parco Lubrite, —Reg. U.S. Pat. Off.

Growth Pattern for Electronics

Farwest Manufacturers Expand Commercial Sales

Military hardware still gets lot of attention from West Coast electronics makers.

But they are also busy developing industrial and commercial markets.—By R. R. Kay.

■ What's ahead for the West Coast electronics industry?

"The next natural step is larger scale production facilities," says Bruce A. Angwin, West Coast Manager, General Electric Co. He believes the growth will come in more sophisticated systems of computers, missiles, and space navigation equipment.

Branching Out—Impact of the electronics industry on the Farwest's economy is greater than ever. Last year's sales were $1.775 billion. Missile research, development, and much actual missile production is based on the Coast.

But firms there are also making wide inroads into manufacture of industrial and commercial electronic equipment, formerly supplied by Eastern companies.

Something for Everyone — Last year's Defense Dept. cutbacks really hurt Farwest electronics firms. So many manufacturers began making non-military products they could market.

This was pointed up by the recent Western Electronic Show and Convention (WESCON) held at Los Angeles. Military hardware got a big play from the 30,000 persons who attended the show. But there was big emphasis, too, on industrial and commercial equipment.

Less of the Lab — In the early days when the electronics industry mushroomed on the Coast, most of the money went into research and development. It's a different story today. Firms are doing more and more manufacturing. And the trend will continue.

"We are now practically independent of the rest of the country even for raw materials," Arthur N. Curtiss says. He's Radio Corp. of America's West Coast Products Department manager.

Coming Missile Plans

On the drawing boards of the aircraft-missile industry:

A new rocket which will be able to destroy any incoming ballistic missile. It will have a speed ten times greater than any of today's aircraft.

Plans for one of the world's highest speed wind tunnel centers. It will be able to test vehicles designed to go over 8000 mph.

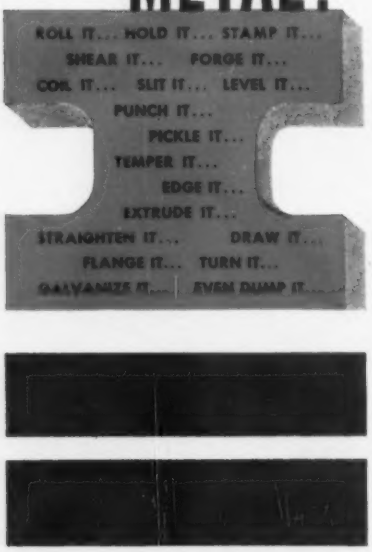
Minuteman, the new ICBM to be fired from underground, should be ready in 1962. The B-70, a chemically-fueled bomber now called Valkyrie, and the F-108 long-range fighter, are due about the same time.

The industry is also designing a far more advanced bomber with a speed of 4000 mph.

Newest Look in Jet-Age Ground Support

TURBINE-POWERED TUG: Low-slung gas turbine-driven unit, named the Turbo-Tug, moves Boeing 707 Jet Stratoliner. Coupled to jet's landing gear it rotates the airplane's own wheels. One engine drives the hauler, another powers a compressor so Turbo-Tug can start jetliner's engines.

HOW DO YOU ADD THE VALUE TO METAL?



THERE'S A BLISS MACHINE THAT WILL DO THE JOB!

BLISS
SINCE 1857

BLISS is more than a name...it's a guarantee

E. W. BLISS COMPANY General Offices: Canton, Ohio

Britain Cuts Research Corners

Industry Group Solves Problems for Member Firms

Many production questions in Britain are handed over to PERA for answering.

It's doing a lot of spadework in the automation field.—By E. J. Egan, Jr.

▪ British researchers find that carbide turning tools perform about the same regardless of the method used to grind them. But it's a different story with costs. Grinding cost per tool using a metal-bonded diamond wheel, electro-spark erosion, or a silicon carbide wheel is about 8, 9 and 13 cents, respectively.

Digging out facts like these is the job of Britain's Production Engineering Research Assn. A cooperative venture of British Government and Industry, it was set up shortly after World War II, is supported by 640 firms at present. As "members," each subscribes between $175 and $1250 annually.

Many Other Projects — The Assn.'s basic research activities cover areas of broad interest to member firms: metal cutting, metal forming, surface finish, machine tools, automation, and the like.

For example, PERA research on the use of cutting fluids indicates that heat-transfer ability may be more important than lubricating properties.

This was brought out in a series of turning, drilling, and grinding tests. A conventional soluble oil emulsion was compared with two fluids made from plain tap water treated with corrosion inhibitors. Equivalent tool lives were obtained with all three cutting fluids.

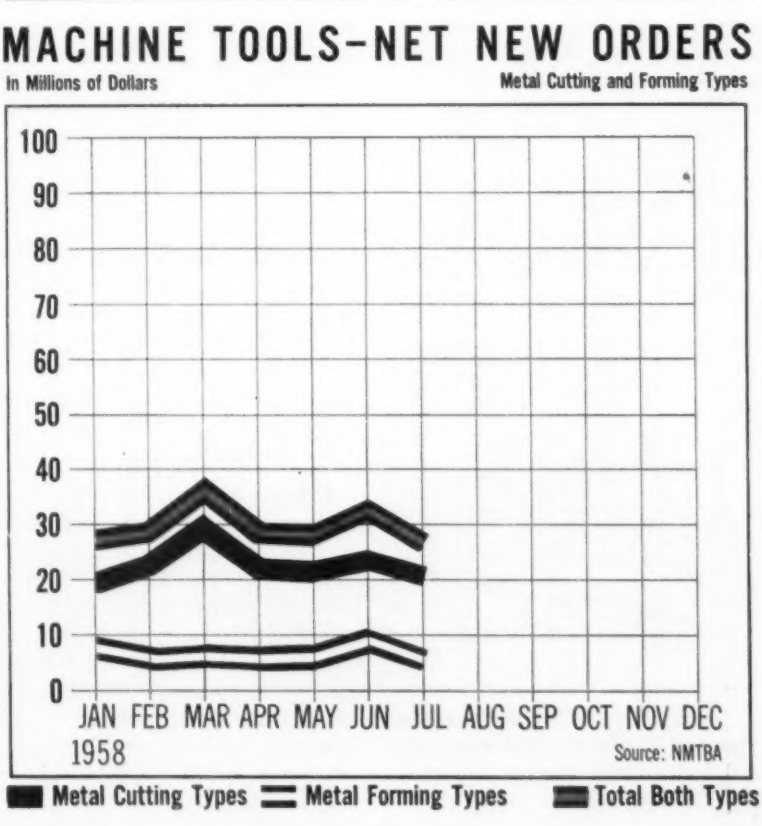
Practical Uses — Member firms often put PERA research reports and technical services to good use. One, shown how to cold extrude electrical parts, has saved up to $84,000 per year in machining costs. Another learned how to substitute automatic finishing for a slow, manual process, thereby saving over $100,000.

PERA's staff of 240 people provides a technical inquiry service in addition to its basic research work. Members pour in about 3000 requests a year for help on all types of production problems.

Elaborate Training Setup — The Assn.'s education and training center also arranges intensive training and refresher courses for key personnel at all industrial levels. For those who come to PERA headquarters at Melton Mowbray, there are lecture theaters, study rooms, and demonstration bays.

There is also a mobile unit equipped with a movie projector and demonstration facilities.

Automation Mission — Research in automation is typical of the thorough way PERA works. A broad-scale project has been underway since 1955. A recent report to members covered hoppers and selector devices for machine tools and presses. Future reports will tackle equipment for loading, unloading, clamping, and conveying workpieces.



INDUSTRIAL BRIEFS

Progress at Brookhaven—Rochester Div. of Consolidated Electrodynamics Corp. has a $195,000 order from the Brookhaven National Laboratory for high-vacuum pumps. They will be used to evacuate a 30 billion electron-volt synchrotron which is nearing completion at Brookhaven's nuclear research center, Upton, L. I., N. Y.

Platers' Special — A new company, Keystone Plating Supply Inc., has been formed to serve the metal finishing industry in Michigan. J. E. Keyes and H. V. Pfeuffer, founders and co-owners, are former sales executives of Wagner Brothers, Inc., Detroit. Keystone offices and warehouse are located at 21039 Dequindre, Hazel Park, Mich.

New Aluminum Transformers—General Electric Co. has announced a new line of open dry-type transformers using aluminum in all current-carrying components to provide quieter and lighter-weight units for commercial and industrial service.

Hyster's New Home—Full production of Hyster lift trucks is underway at the company's new Danville, Ill., plant. The plant houses a completely mechanized assembly line, a mechanized shipping department, large parts storage, and a handling and receiving department.

"Ever since we hired that Professor of English to check copy, the public has failed to get the message."

Service Before Blastoff — Lockheed Aircraft Corp.'s Georgia Div. has established a "Special Products" branch to design, develop, and produce support equipment for missiles and aircraft. It will do sub-contract work for other companies on tools, parts, and assemblies. It will also sell services.

A Line to Baker—Baker Brothers, Inc., Toledo manufacturer of metalworking machinery, has bought the Detroit Screwmatic 750 line from Gear Grinding Machine Co., Detroit. The name of the high-capacity machine will be changed to Baker Automatic Bar Machine.

Coming: Quiet Airstrips — The Metal Products Div., Koppers Co., Inc., Baltimore, Md., has a contract from the US Navy for the design and production of 30 portable jet engine silencers. The silencers, will be used at various Naval airfields throughout the country to protect maintenance personnel and community neighbors from excessive jet noise.

Voodoo Followup — Follow-on orders exceeding $9 million for components of Navy and Air Force jet fighters have been received by Temco Aircraft Corp. from McDonnell Aircraft Corp., St. Louis. Orders are for aft fuselages for the Air Force F-101 Voodoo Fighter-interceptor.

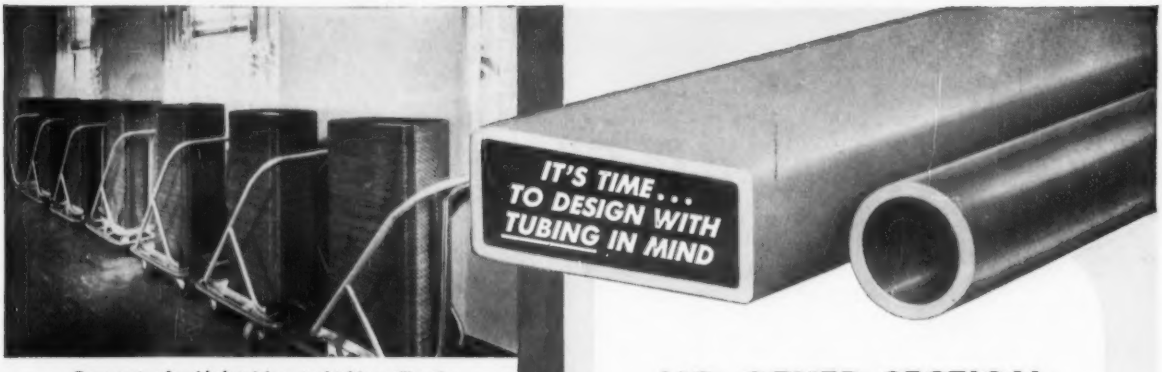
Ohio Bridgework — The R. C. Mahon Co. has been awarded contracts from individual Ohio contractors totaling about $3.3 million, to engineer and fabricate 33 structural steel bridges for Ohio's north-south turnpike. Mahon will erect 18 of the bridges.

Ceramic Newcomer—Vitro Corp. of America, has a patent on a process for making ceramic-clad metal structures which combine the temperature, corrosion, and oxidation resistance of ceramic materials with the structural strength of metals. The patent covers the electrophoretic deposition and bonding of ceramic materials to a metal body by interposed graded coatings of metal and ceramic materials.

Switch On — General Electric will consolidate its mushrooming communications business in an existing company plant in Lynchburg, Va. All operations of the Communication Products Dept. now located in four New York cities will be moved to Lynchburg. The manufacture of rectifier equipment will be transferred to an existing GE location in Philadelphia.

Aluminum in Stock—Hynes Steel Products Co. has been appointed a general line industrial distributor for Reynolds Metals Co.'s aluminum products. Hynes is a supplier of metal to appliance and office equipment industries in the east and midwest.

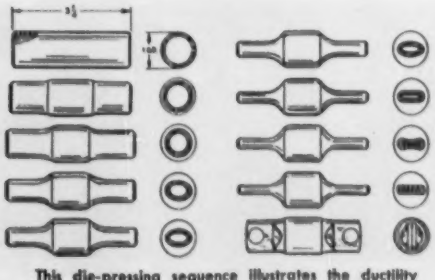
Indexing the Indexes — IBM Corp. has signed an engineering contract through its Special Engineering Products Div. to produce a Special Index Analyser for E. I. du Pont de Nemours & Co. The machine provides fast, accurate, and automatic reference to catalogued data.



Tray carts of welded stainless steel tubing utilize the beauty and lasting finish of stainless—the structural advantages of tubing.

Welded steel tubing telescopes accurately in this farm equipment application—machining is not required.

For critical service in temperature and corrosion applications welded stainless steel tubing shows its merit in this cold head for nuclear equipment.



This die-pressing sequence illustrates the ductility of welded steel tubing for severe deformation requirements.

NO OTHER SECTION OFFERS THE

DESIGN ADVANTAGES

OF

WELDED TUBING

Carbon • Alloy • Stainless Steel

Only *welded* steel tubing can provide the inherent advantages of a hollow form's efficiency, strength and light weight *combined* with uniform wall thickness, concentricity, accuracy of dimension and ductility. Add to these your choice of surface finish, heat treatment, steel grade, size and shape.

You'll agree, only Welded Tubing can offer *all* of these design advantages. Your quality *welded* tube producer can always meet your exact specification.

FORMED STEEL TUBE INSTITUTE

Specific information on welded tubing is available on request to:

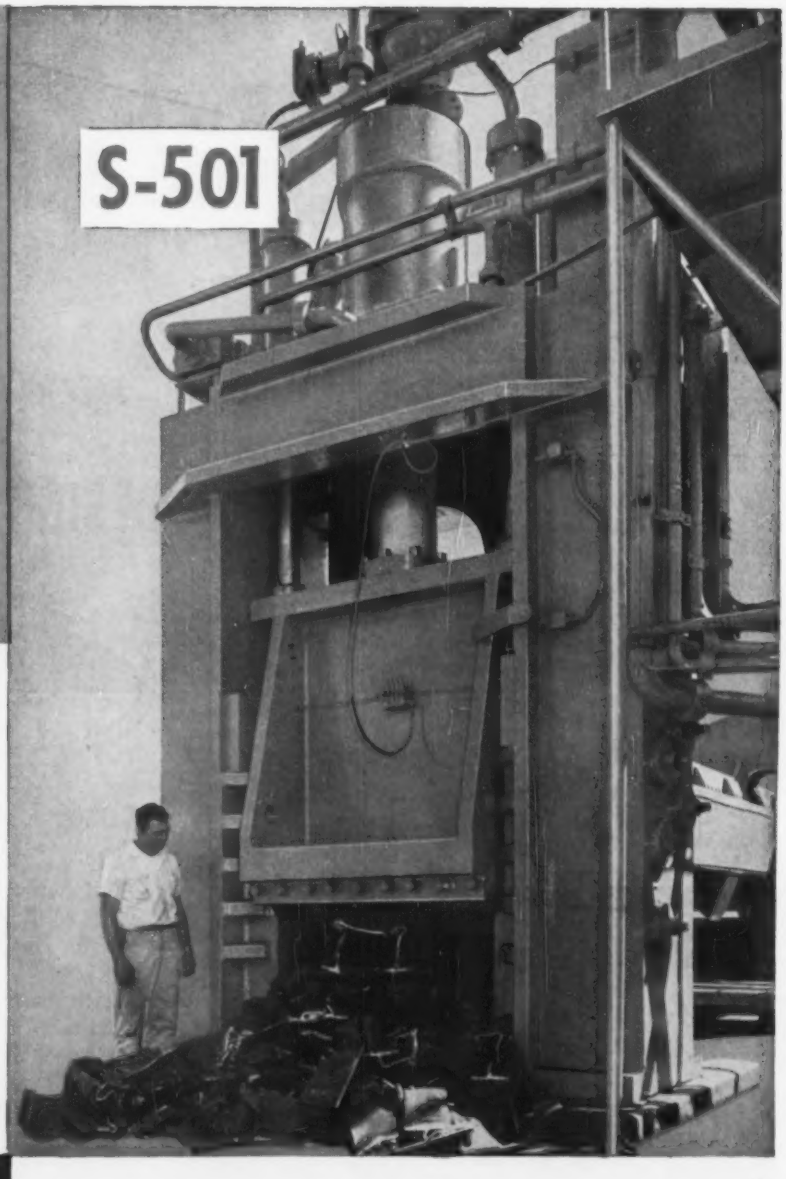
FORMED STEEL TUBE INSTITUTE

850 HANNA BUILDING • CLEVELAND, OHIO

An Association of Quality Tube Producers

LC-981

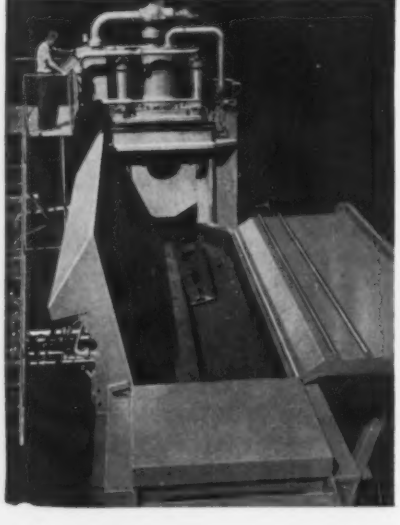
CUTS 200 TONS PLATE SCRAP IN EIGHT HOURS



production is continuous

labor costs 70% lower

The Harris Shear is revolutionary in design. It is the first new development in the scrap industry since the introduction of the Baling Press. Railroad scrap, pipe, farm, industrial, automobile and miscellaneous junk shop scrap work through on a 12 second cycle. A 3 man crew and a crane handle the job in all kinds of weather.



The charging box is 264" x 80" x 30". It has a flat type loading hopper. The cover and charging ram operate like a baler. This means more material under each stroke of the knife.

The Harris Shear brings new profits to Scrap Yards

HARRIS FOUNDRY & MACHINE CO.

Hydraulic Engineers Since 1889

CORDELE, GEORGIA

Talk with a Man from Harris

R. C. Hauck, named president and a director, The Southwest Mfg. Co., Aurora, Missouri.

John N. Pomeroy, Jr., elected president, General Smelting Co. of Philadelphia; **J. Nevin Pomeroy,** named chairman of the board and senior consultant.

J. V. van Pelt, III, elected controller, Vulcan Materials Co.

J. T. Romano, elected vice president, Federal Pacific Electric Co., Newark, N. J.

R. D. Ahern, promoted to comptroller, Wonder Building Corp. of America, Chicago.

H. L. Charlton, appointed vice president, sales and **L. C. Pietsch,** as vice president, planning, Phoenix Mfg. Co., Joliet, Ill. and Catasauqua, Pa., subsidiary of Union Tank Car Co.

Walt Schindler, named vice president, engineering, Vard, Inc., Pasadena, Calif.

D. M. Norton, elected vice president, industrial relations, The Ohio Injector Co., Wadsworth, O.

J. M. Keene, Jr., appointed vice president and asst. sales manager, Kennecott Sales Corp.

A. E. Carter, elected vice president, manufacturing, Worthington Corp., Harrison, N. J.

R. A. Bland, appointed general sales manager, **E. T. Risan,** named assistant to the president and **J. E. Martin,** plant manager, Sutton Engineering Co.

Philip Lynn, appointed vice president, industrial relations, Vard, Inc., Pasadena, Calif.

H. J. Fryar, elected vice president, manufacturing and engineering, The Coleman Co., Inc., Wichita, Kan.

C. T. Hapgood, named president, Petroleum Pipe & Supply Co., Pittsburgh.

J. L. Whalen, promoted to vice president and sales manager, Eclipse Air Brush Co., Newark, N. J.

E. H. Brumley, elected president, Brumley-Donaldson Co., Huntington Park, Calif.; **L. O. Hofstetter,** named vice chairman of the board.

J. A. Perham, named chief engineer, SpeedWay Mfg. Co. division at LaGrange Park, Ill., Thor Power Tool Co.

J. N. Lind, named director, transportation, Armco Steel Corp.

H. B. Swindells, elected treasurer, Laminated Shim Co., Inc., Glenbrook, Conn.

T. V. Baines, appointed consulting geologist, International Nickel Co. in Africa.

Art Ferraro, named plant manager, Colvin Laboratories, Inc., E. Orange, N. J.

E. W. Hollister, appointed asst. manager, The Austin Co.'s 14-state Cleveland district.

G. W. Jones, appointed manager, market research, Riverside-

Alloy Metal Div., H. K. Porter Co., Inc., Riverside, N. J.

E. L. Pulaski, appointed asst. chief works metallurgist, West Leechburg Works, Allegheny Ludlum Steel Corp., Pittsburgh.

T. S. Chambon, appointed manager, manufacturing, Kropp Steel Co., Rockford, Ill.

J. O. Campbell, appointed Chicago area sales manager, Westinghouse Electric Corp's Apparatus Div., Chicago.

Thomas Swartwout, appointed distributor sales manager, Aetna Ball & Roller Bearing Co., Div. of Parkersburg-Aetna Corp.

J. H. Francis, promoted to manager, Canton sales office, The Trane Co.

J. F. Murray, appointed chief product engineer, Pesco Products Div. and Wooster Div., Borg-Warner Corp.

R. P. Dunn, appointed technical director, Lindberg Melting Furnace Div., Lindberg Engineering Co., Chicago.

R. W. Schultz, promoted to director of pricing, Midland Screw Corp., Chicago.

H. F. Guipe, promoted to factory manager, Penn Controls, Inc., Goshen, Ind.

C. B. Cobun, appointed asst. district representative, Pittsburgh sales district, Heppenstall Co.

C. B. Persons, appointed Cleveland representative, Industrial Div., Metalwash Machinery Corp., Elizabeth, N. J.

James MacGregor, named sales engineer, Pipe and Tube Mill Div., The Aetna-Standard Engineering Co., Pittsburgh.

J. G. Bouska, appointed sales manager, Los Angeles branch,

KAISER CHEMICALS

Average of 470 heats with endwalls of Kaiser Periclase Chrome brick!

450 Heats: "In #4 Furnace, endwalls of Kaiser Periclase Chrome Brick lasted 450 heats—longer than any competitive brick used."

403 Heats: "Kaiser Periclase Chrome Brick tested in endwalls of furnace averaged 403 heats (while competitive endwalls in same furnace campaigns averaged 265 heats)."

557 Heats: "Earlier this month this furnace finished its third campaign for a total of 557 heats with endwall of Kaiser Periclase Chrome Brick. (Competitive brick last only 180-200 heats in other furnaces in shop.)"

3 | 1410 (Total)
470 AVERAGE

Operators testing Kaiser brick against competitive brands consistently come up with reports like these—proof of the money-saving performance advantages you gain with Kaiser Periclase Chrome Brick. Here are the properties that make possible such performance:

1. Low Chromite Content. Chromite content is the minimum amount necessary to provide thermal shock resistance (only 9.1% Cr_2O_3). Lowering of chromite also reduces swelling in presence of iron oxide, thus minimizes buckling and peeling.

2. Uniform High Strength because the ceramic bond is formed BEFORE the chemical bond burns out.

3. Outstanding Resistance to Distortion, Shrinkage—no liquid phase in the conversion from chemical to ceramic bond.

4. Excellent Resistance to Chemical Attack by furnace fumes, iron oxides and slags is assured by high magnesium oxide content, maximum brick density (low porosity), and chemically stable composition.

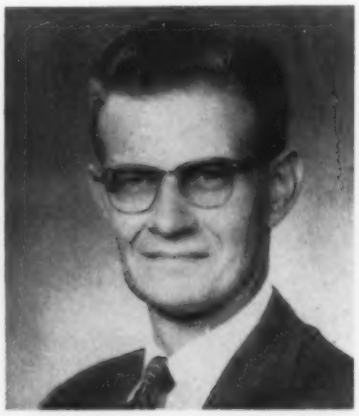
Make a comparison test and see how much more life you get with Kaiser Periclase Chrome Brick. Your Kaiser Chemicals Sales Engineer will be glad to help.

Call or write Kaiser Chemicals Division, Dept. S8131, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:
PITTSBURGH 22, PA. . . . 3 Gateway Center
HAMMOND, IND. . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . 1924 Broadway

Refractory Brick & Ramming Materials • Castables & Mortars • Magnesite
Periclase • Deadburned Dolomite • Aluminas • Magnesias

Exide Industrial Div., The Electric Storage Battery Co., Philadelphia.

C. E. Bowland, appointed east coast field engineer, Gulton Industries, Inc., Metuchen, N. J.



C. L. Kerr, appointed sales representative, Pittsburgh sales district, Selas Corp. of America, Dresher, Pa.

J. J. Ranna, promoted to manager, New Orleans district sales office, A. M. Lockett & Co., Ltd., sales subsidiary of The Babcock & Wilcox Co.

Robert McC. Maxwell, appointed manager, sales, New York district, Jessop Steel Co., Washington, Pa., and of its subsidiary company Jessop Steel International Corp.

R. V. Elicano, appointed an operations research engineer, Production Control Dept. of Allis-Chalmers West Allis Works.

Says Maintenance Foreman of large gas processing plant.

W-K-M's new acf® non-lubricated BALL VALVE

This new product of W-K-M's *Creative Engineering* has been service-proved with these ladings.

Acetate • Crude ammonia liquor • Aviation fuel and Stoddard solvent • Propane • Toluol • Methylethylketone (MEK) • Alkaline slurry • Jet engine fuel (test cells) • Naphtha and coal tar solvents • Paint cleaner and thinner • Liquid soaps, DDT and chlordane • Vinyl chloride • Butadiene liquid • Copper ammonium acetate • Carbon bisulphide • Cleaning naphtha • Lime and soda ash slurry • Riboflavin media • Gasoline (tank truck) • Helium gas • Coke oven by-product gas • Gasoline (tank car) • Chlorinated solvents.

For 3½ years, users tested this new valve in the hardest services that could be found.

Now, W-K-M offers it to you as a **service-proved** new product, a new product with no bugs, a typical example of W-K-M's leadership in design, production and service.

This valve will deliver promised performance; you can specify it with complete confidence in its efficiency, economy, ease of operation and maintenance.

You should know more about it.

Write for Catalog 1000 for complete information.

AVAILABLE in carbon steel (ASA 150 lb., 300 lb.), and semi-steel (200 lb. WOG, 400 lb. WOG); sizes range from ½" through 6". Also ASA 600 lb., sizes ½, ¾ and 1".

W-K-M

DIVISION OF acf INDUSTRIES
INCORPORATED
P. O. BOX 2117, HOUSTON, TEXAS

5812

New Production Ideas

Equipment, Methods and Services

Unit Prevents Itself From Drilling Bad Holes

Put a bad drill in this machine and it'll refuse to work. A standard gundrilling machine, it makes anything but precision hole-making practically impossible. Drilling in a variety of materials, the unit holds critical tolerances on hole concentricity, squareness, finish and size. It easily adapts for various size holes and parts. The standard unit is versatile. One 16-spindle installation, for instance, is presently drilling 0.296-in. diam holes, 16½-in. long, in automatic transmission shafts, at a 360 per hour rate. Except for loading and unloading, it's completely automatic. Even these can be provided as extras. A unique setup prevents tool breakage. If the gundrill is dull or improperly ground, the machine stops drill feeding, actuates a "rapid return," halts the spindle, even cuts off the oil supply. (Crescent Tool & Machine Co., Inc.)

For more data circle No. 47 on postcard, p. 85

Fills Gap Between Belt, Gear Driven Lathes

Designed to fill the gap between conventional belt-driven and geared-head lathes is this 15-in. lathe. It combines capacity and power of a geared-head lathe with economy and flexibility of a belt-driven one. Key feature of the machine tool is its fully enclosed headstock with a "work holding only" spindle. Although the high torque drive is direct to the spindle, all radial and thrust loads from the drive are absorbed by large tapered roller bearings. These bearings support an input pulley in the rear of the headstock wall. This setup transmits power to the spindle through a positive lock clutch in direct drive, or through gears in backgear drive. Thus, the spindle uses full capacity as a work holder without stress of drive pressures or power loss inherent in machines with intermediate shafts. (Sheldon Machine Co.)

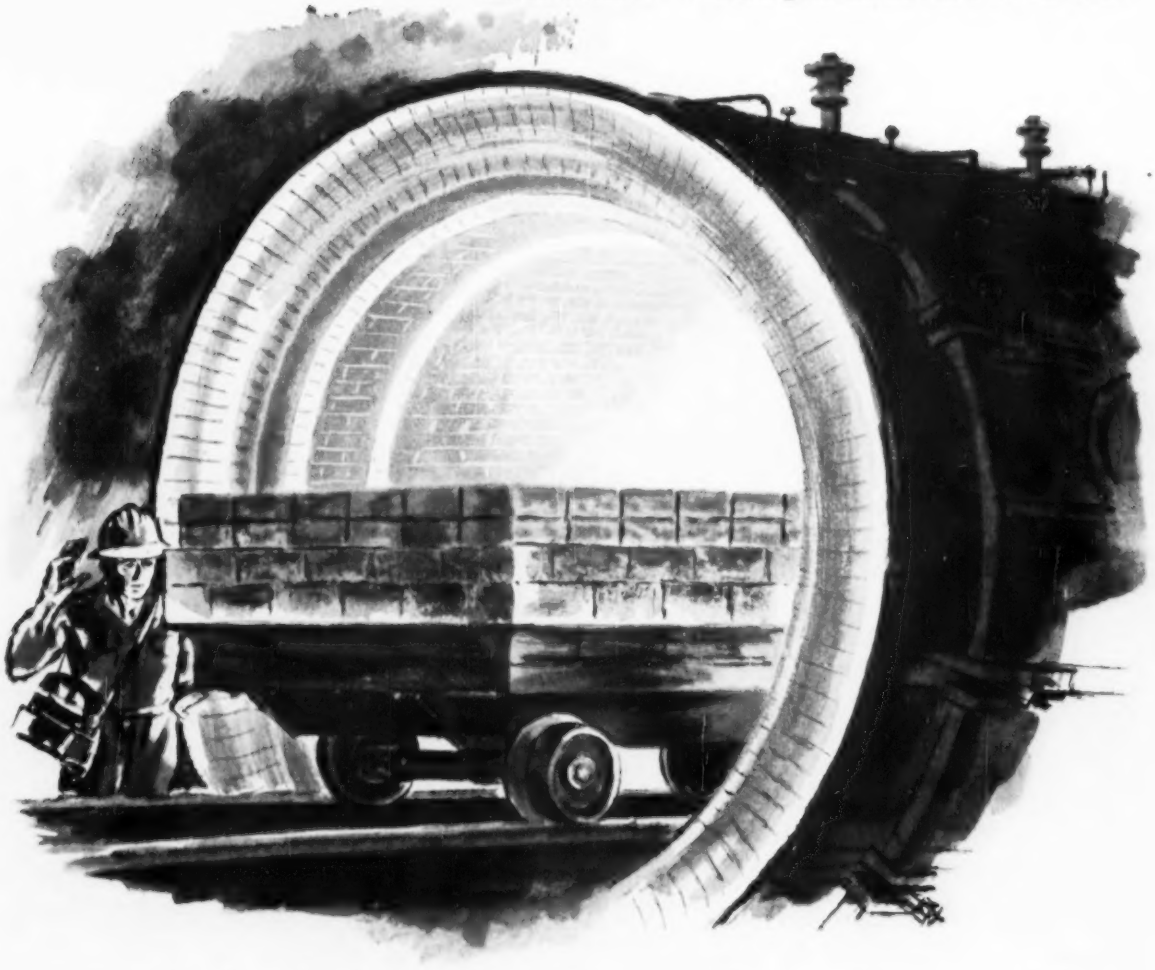
For more data circle No. 48 on postcard, p. 85

Lab Furnace Gives High Purity Test Sample Melts

For the evaluation melting of small metallic samples, this laboratory type furnace gives high purity melts. The vacuum multiple "button" hearth unit handles small poundage jobs. Melts can be consumable or non-consumable by using interchangeable hearths. Charge loading at table level is easy; quick-acting clamps and a counterweighted water cooled chamber see to that. The furnace has side and light ports in convenient locations around a vacuum sealed swivel that houses the water cooled stinger rod. A glove port allows inverting of the metal test sample. A mechanical pump backing up an oil diffusion pump comprise the unit's vacuum system. The furnace's regular power source comes in the form of a 40-volt, 500-ampere rectifier setup. However, electrical power to operate it can be supplied from any convenient direct-current welder-generator source. (Zak Machine Works, Inc.)

For more data circle No. 49 on postcard, p. 85

Electromet ... *Making metals do more all the time!*



Metals find a new future in a vacuum!

Only a vacuum inside this giant furnace permits the high purification that makes possible many amazing new metals and alloys. This furnace at ELECTROMET's Marietta, Ohio, plant is over 100 feet long—largest of its kind ever built. It produces new high-purity chromium and manganese metals and very low-carbon ferrochromes which are major factors in the lower costs and improved properties of stainless steels and high-temperature alloys.

Vacuum processes also make possible the production and fabrication of capacitor-grade tantalum, reactor-grade columbium, and vanadium metal. These metals now make significant contributions to the aircraft, electronic, missile, and nuclear industries.

ELECTROMET scientists and engineers continually work toward further advancement in vacuum technology. At the same time, they develop new and useful alloys and metals . . . find practical solutions to customers' problems in using ferro-alloys.

Want to know more about recent developments in the field of vacuum-quality alloys and metals? ELECTROMET can help.

ELECTRO METALLURGICAL COMPANY, *Division of Union Carbide Corporation*, 30 East 42nd Street, New York 17, N. Y.

Electromet
FERRO-ALLOYS AND METALS

UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Tester Checks Threads for Lead and Taper

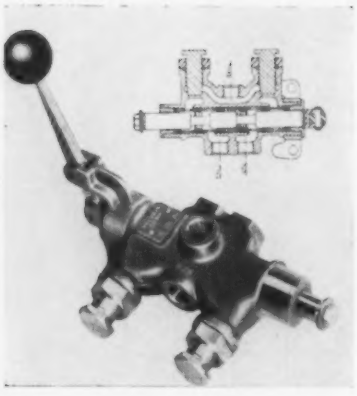
This lead tester combines ability to check lead of straight or taper threads; internal or external threads; and taper of threads or cylinders. Designed for use in inspection rooms and gage laboratories, this high-precision machine gages internal threads ranging from 1¼ to 16-in. diam. It checks external threads from 0 to 16 in., on work heavy as 500 lb. It's made to test the lead and taper of API gages. These once were too large or too heavy for conventional methods of checking work between centers or mounted on V-blocks. The lead tester can be used for the checking of all types of lead on thread gages and/or precision products. Direct readings are made to 0.00002 in. for lead, and to 0.0001 in. for taper. Interchangeable gaging spindles and ball points handle many thread pitches. (Pratt & Whitney Co., Inc.)

For more data circle No. 50 on postcard, p. 85

Tractor Shovels Operate Under Dusty Conditions

Of 7000-lb capacity, a tractor shovel has special features to protect it in dusty areas. The rubber-tired unit can have either a gasoline or diesel engine giving 105 to 110 hp. Diesels come in 2 or 4 cycle types. To protect the engine from dust and dirt, the four-wheel drive tractor has a triple air cleaner system with a precleaner and two oil-bath air cleaners. A cartridge type oil filter is built into the hydraulic reservoir. Similar filters protect engine oil, the transmission and torque converter oil. Front service brakes are sealed. (Frank G. Hough Co.)

For more data circle No. 51 on postcard, p. 85



Manual 4-Way Valve Has Built-in Speed Control

Manually operated 4-way valves are now available with built-in speed control. They provide precise operating speed regulation of double acting cylinders and similar devices, in either or both directions. Valves come with ¼ or ⅜-in. NPT ports. Large area control orifices afford unrestricted flow when fully open. This permits precise adjustment of speed. It also provides freedom from clogging and possible restriction caused by impurities in the controlled fluid to adjust flow, a standard size hex head on the flow control stem and a hex lock nut are used. Tightening the lock nut secures the adjustment and effectively O-ring seals the flow control stem. Unrestricted flow through the valve body results from the internal flow area being equal to nominal pipe size. (Valvair Corp.)

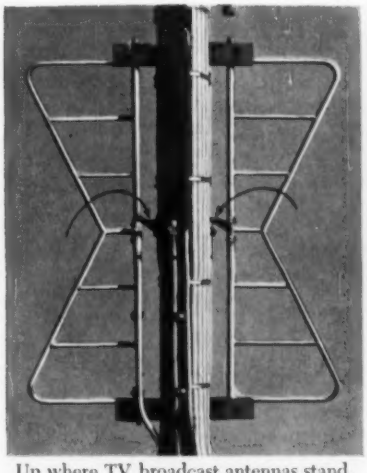
For more data circle No. 52 on postcard, p. 85

Instrument Finds Cracks in Conductive Materials

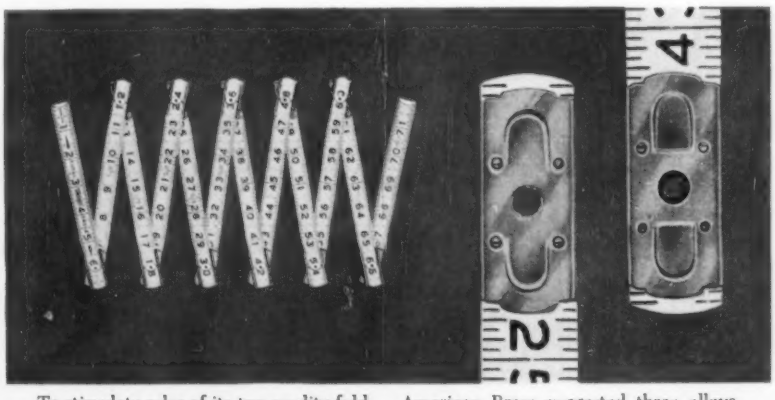
A new eddy current instrument locates and determines relative seriousness of defects in all conductive materials. It also quickly sorts mixed lots of ferrous and nonferrous metals for differences in hardness, alloy, and heat treat condition. And it measures thickness of certain conductive and nonconductive coatings on conductive bases. The unit consists of an indicator, an inspection probe, and a power line cord. As the probe passes over a crack or metallurgical difference, an unbalance occurs. This indicates via a needle deflection on a meter located on the front panel of the instrument. An all-purpose probe, angle probe, and spark plug port probe are available

TRY A FRESH APPROACH

Don't just take your metals for granted—specify the properties you need. The Man from Anaconda may come up with some very interesting answers.



Up where TV broadcast antennas stand, normal wind causes flexing of metals. So jumpers between coaxial cables and radiators must be resilient – beside being conductors, giving some structural support. Ordinary phosphor bronze seemed adequate, but there were fatigue failures.

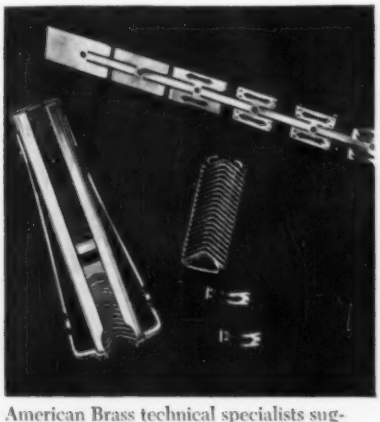


To stimulate sales of its top-quality folding rule, and to meet Navy specifications, Eagle Rule Mfg. Corporation sought a metal for rule joints that would resist wear and corrosion, and provide the proper spring tension. Phosphor bronze, which had these qualities in excess of needs, cost too much.

American Brass suggested three alloys. Eagle Rule chose Ambronze-420 (88% Cu, 11 Zn, 1 Sn) because rule joints of this alloy met all requirements, withstood 400,000 cycles in wear test (Navy required 7000). It cost only pennies per pound more than yellow brass, much less than phosphor bronze.

RCA listed desirable properties of phosphor bronze – added *extra*-high endurance, *extra*-long fatigue life. American Brass suggested Duraflex®, Anaconda superfine-grain phosphor bronze. RCA tried it, found it the answer—at no extra cost—specified Duraflex to the manufacturer, Dielectric Products Engineering Co., Inc., Raymond, Maine.

Technical Oil Tool Corp. asked Anaconda to help select the metal for a new magazine-type clip used to close surgical incisions. The metal had to provide the right tension to hold edges together, yet open easily—form readily, hold sharp die-cut edges, be proved in surgical use.



American Brass technical specialists suggested Nickel Silver, 18%-719 as best suited to meet all requirements. Autoclip, shown in use above, is the result. Incisions are held together with least damage to tissues. Surgeons can work faster in applying and removing clips.

STARTING with 93 standard alloys, The American Brass Company can make minor variations in composition, fabrication, and annealing to provide an almost unlimited number of combinations of useful properties. When new or unusual problems arise, ask for the help of the Technical Dept. in selecting the right metal. For such help or a copy of Publication B-32, "Anaconda Copper & Copper Alloys," write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario, Canada.

5850

ANACONDA®

COPPER • BRASS • BRONZE • NICKEL SILVER MILL PRODUCTS

Made by The American Brass Company

NOW!

FIVE MOLY CARBURIZING STEELS ACCEPTED AS STANDARD AISI-SAE GRADES

AISI Number	C	Mn	P Max.	S Max.	Si	Ni	Cr	Mo	Corresponding SAE Number
	—	—			—	—	—	—	
4422	0.20/0.25	0.70/0.90	0.040	0.040	0.20/0.35	—	—	0.35/0.45	4422
4427	0.24/0.29	0.70/0.90	0.040	0.040	0.20/0.35	—	—	0.35/0.45	4427
4520	0.18/0.23	0.45/0.65	0.040	0.040	0.20/0.35	—	—	0.45/0.60	4520
4718	0.16/0.21	0.70/0.90	0.040	0.040	0.20/0.35	0.90/1.20	0.35/0.55	0.30/0.40	4718
8822	0.20/0.25	0.75/1.00	0.040	0.040	0.20/0.35	0.40/0.70	0.40/0.60	0.30/0.40	8822

Wide use in automotive transmission and differential ring gears and pinions results in recognition of Molybdenum's economical contribution to case and core hardening in carburizing steels. These economies can be useful in most of your carburizing applications. Now available through your steel suppliers.

CLIMAX MOLYBDENUM CO.

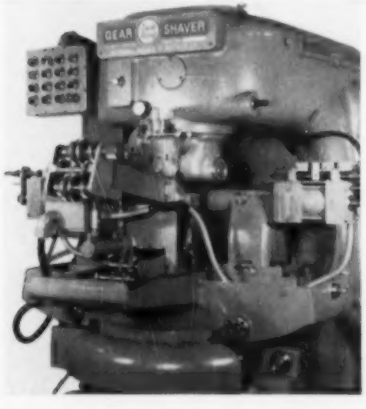
A DIVISION OF AMERICAN METAL CLIMAX, INC. • 500 FIFTH AVENUE, NEW YORK 36, N. Y.

as standard accessories. Also, special probes can be designed as needed, to reach surfaces not easily accessible or to be easy to use on unusual contours. (Magnaflux Corp.)

For more data circle No. 53 on postcard, p. 85

Gear Loader

Automatic loading of cluster-type gears on rotary gear shaving machines is performed by a new loader. It handles four different setups on a single part. The loader



is of the rocker type. An air cylinder in it powers a rocker arm mechanism. This removes gears one-at-a-time from an input magazine feed. It deposits them for shaving by the machine. (National Broach & Machine Co.)

For more data circle No. 54 on postcard, p. 85

Gunning Mix

Hot or cold repairs of steel furnaces can be made with a new basic refractory gunning mix. It's a highly refractory chrome-periclase mix for either hot or cold maintenance of back and front walls of open-hearths and sidewalls of electric arc furnaces. It adheres well to vertical walls. Resistance to iron oxides is high. (Kaiser Chemicals Div.)

For more data circle No. 55 on postcard, p. 85

Steel Car Floors

To reduce damage of merchandise in transit, two new steel products literally "armor plate" the inside of a boxcar. They also provide plenty of load-anchoring and blocking points. Employing steel strap anchor belting, one product anchors freight through a series of permanent wall anchors. The other product is a steel-and-wood combination floor designed to last the lifetime of the car. (Youngstown Steel Car Corp.)

For more data circle No. 56 on postcard, p. 85

Tumbling Media

For use in small and medium-sized parts tumbling, new metal tumbling media are produced by sintering. They come in several shapes. According to their maker, they exhibit up to ten times longer useful life than conventional tumbling media. Sintering permits control of material hardness, shape, porosity and surface. (Dixon Sintaloy, Inc.)

For more data circle No. 57 on postcard, p. 85

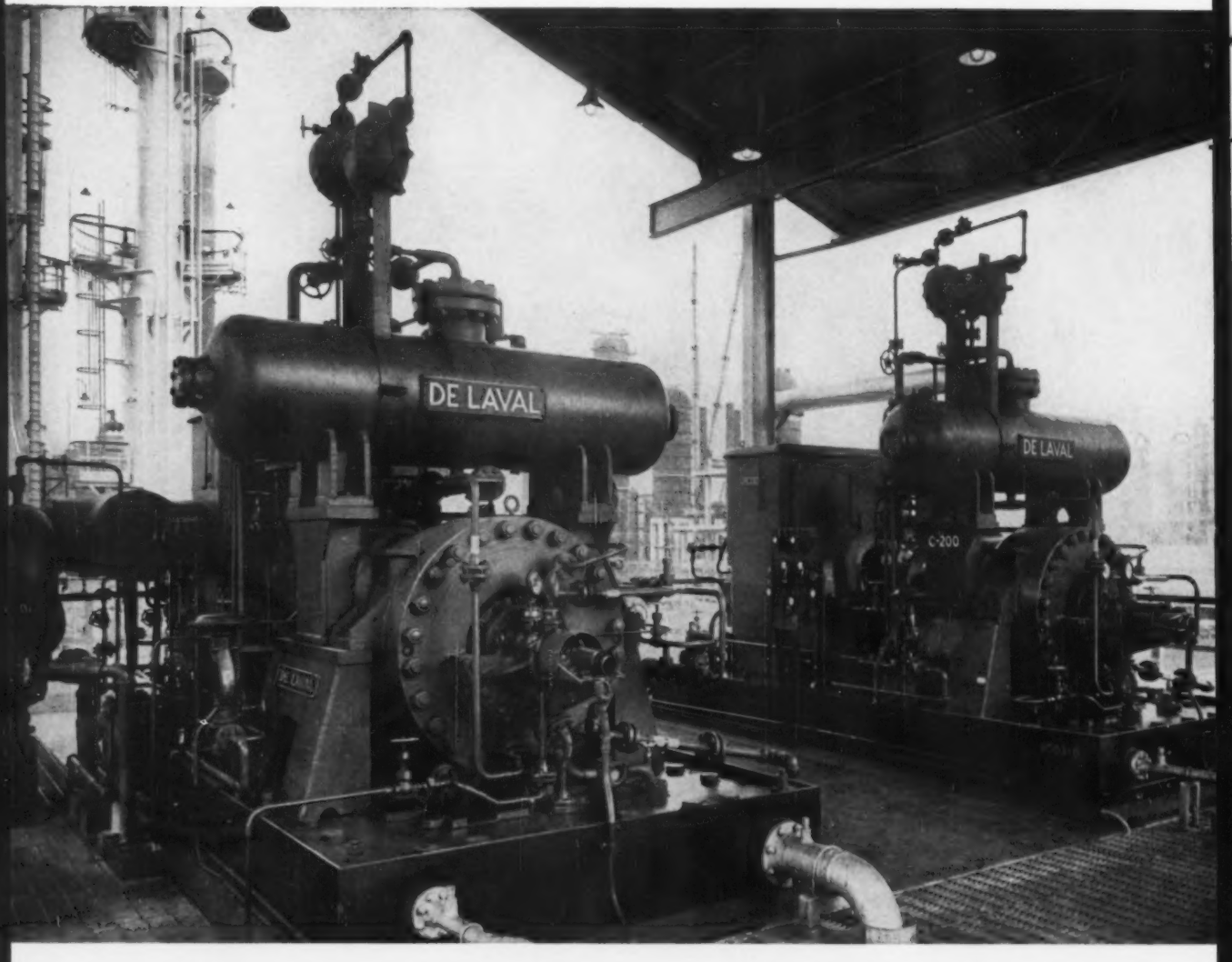
Hand Saw

For working in limited and inaccessible spaces, a new saw easily cuts any profile metal and steel or cast iron pipe up to 6-in. OD. The high speed steel saw blade moves at a speed of 480 strokes per

minute with a 2½ in. thrust. It's guided by rollers moving on ball bearings. A steel pipe 2½ in. diam with a 1/5 in. wall can be cut in 1½ minutes. The unit which converts rotary movement into reciprocation. (Victor J. Krieg, Inc.)

For more data circle No. 58 on postcard, p. 85

Creative Engineering by DE LAVAL



Designing to Customer's Requirements

De Laval makes all sizes and types of centrifugal compressors. But it's that little *extra*, which we call *creative engineering*, that makes De Laval so important to you. Take the two De Laval barrel type centrifugal compressors at Magnolia Petroleum's new refinery, Beaumont, Texas, for example. Designed around given job specifications, they give extra performance, longer life and trouble-free operation.

Whether it's centrifugal compressors, blast furnace blowers, ship propulsion units, turbine generators or other diversified products serving practically *all* industries, De Laval *creative engineering* plus precision manufacturing and highest quality control assures lasting customer satisfaction.

DE LAVAL *Steam Turbine Company*

899 Nottingham Way, Trenton 2, New Jersey

DL-489

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 85.

Snap Switches

How plant engineers use snap-action switches to increase production efficiency is told in a publication. It introduces six methods which can save man-hours, protect operators and machinery, and eliminate waste. (Micro Switch Div., Minneapolis - Honeywell Regulator Co.)

For free copy circle No. 1 on postcard, p. 85

Stainless Tubing

Design engineers developing machines, parts, apparatus and equipment may find interest in a new bulletin. The 8-page folder explains how stainless steel mechanical tubing can result in savings to the manufacturer. (Babcock & Wilcox Co.)

For free copy circle No. 2 on postcard, p. 85

Storage Equipment

Color steel storage equipment is offered in a new color-card. (Alan Wood Steel Co.)

For free copy circle No. 3 on postcard, p. 85

Electric Contacts

Projection - welded "Steelback" electrical contacts are described in a 4-page folder. These contacts consist of a flat or radius facing of contact material bonded to a metal backing without use of solder. (Gibson Electric Co.)

For free copy circle No. 4 on postcard, p. 85

Furnaces

Hardening, carbonitriding and carburizing furnaces appear in a 22-page bulletin. Shown are batch and continuous types. (Lindberg Engineering Co.)

For free copy circle No. 5 on postcard, p. 85

Movable Walls

In its dozen pages a brochure presents key features, architectural specifications, and sectional drawings of a movable wall system. (E. F. Hauserman Co.)

For free copy circle No. 6 on postcard, p. 85

Absorbs Moisture

A new moisture absorbent is announced in a bulletin. (Speco, Inc.)

For free copy circle No. 7 on postcard, p. 85

Overhead Conveyor

Conveyor engineers have prepared a new 44-page catalog. It describes an overhead conveyor. (American MonoRail Co.)

For free copy circle No. 8 on postcard, p. 85

Emergency Power

Requiring virtually no maintenance, a compact charger-battery combination gives power in emergencies. It installs in very little space alongside standby power engines. (C & D Batteries, Inc.)

For free copy circle No. 9 on postcard, p. 85

FREE LITERATURE

Swaging Machine

A brochure introduces a new electro-hydraulic, die closing, rotary swaging machine. The machine reduces diameter of rods, heavy tubes and other items. (The Torrington Co.)

For free copy circle No. 10 on postcard, p. 85

Arc Welding Titanium

Recommendations for arc welding titanium appear in a brochure. It lists various commercially pure grades and alloys which can be arc welded. (Mallory - Sharon Metals Corp.)

For free copy circle No. 11 on postcard, p. 85

Outdoor Fork Truck

Specifications and features of a 2000-lb capacity, pneumatic tire, gas-powered fork truck are contained in a 6-page brochure. (Clark Equipment Co.)

For free copy circle No. 12 on postcard, p. 85

Aluminum Conductors

"Aluminum Electrical Conductors; General Engineering Data" lists some 4000 sag and tension charts on virtually every type covered and bare aluminum conductor. This publication contains 88 pages. (Aluminum Co. of America.)

For free copy circle No. 13 on postcard, p. 85

Titanium Welding

"What's new in titanium welding?" asks a publication which goes on to relate latest techniques in resistance and fusion welding. (Titanium Metals Corp. of America.)

For free copy circle No. 14 on postcard, p. 85

Nondestructive Tester

A 16-page handbook tells how to set and hold dependable quality levels for efficient production and increased profits. It explains fluorescent penetrant nondestructive testing methods. (Magnaflux Corp.)

For free copy circle No. 15 on postcard, p. 85

Chilling

Shrink-fit assembly of metal parts; metal treatment through chilling; gas dehydration; metal and material testing. These are a few of many jobs discussed in a 12-page catalog. (Cincinnati Sub-Zero Products.)

For free copy circle No. 16 on postcard, p. 85

Metal-joining Flux

Correct use of flux can aid in making a sound, strong joint between two solid metals. A 20-page brochure discusses why. (Eutectic Welding Alloys Corp.)

For free copy circle No. 17 on postcard, p. 85

Motors

Four pages describe new weather-protected motors. Available from 250 hp up, they'll serve both indoors or out. (General Electric Co.)

For free copy circle No. 18 on postcard, p. 85

Coiled Sheet

Aluminum coiled sheet, how it's made, and its use are discussed in a 20-page booklet. Charts inside can be handy for designers and engineers. (Cochran Foil Corp., subsidiary of The Anaconda Co.)

For free copy circle No. 19 on postcard, p. 85

Plastic Extrusions

A bulletin pictures a tour through plants of a major extruder and molder of plastic products. Shown are: profile extrusions, gaskets, tubing. Tubing comes in ⅛-in. to 16-in. diam. (Yardley Plastics Co.)

For free copy circle No. 20 on postcard, p. 85

Sling Chains

Registered sling chains outlined in a catalog come in 1-leg, 2-leg, 3-leg and 4-leg styles. Hooks and attachments are also covered. (American Chain & Cable Co.)

For free copy circle No. 21 on postcard, p. 85

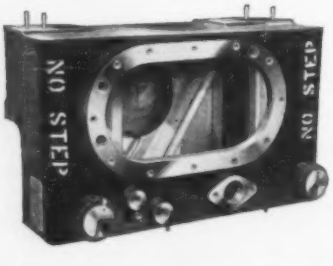
Stainless Steel

Pocket size, a price booklet deals with stainless steel. (Chase Brass & Copper Co.)

For free copy circle No. 22 on postcard, p. 85

Looking for a Fabricating Source...

of welded precision assemblies?



As a major producer of circular parts and welded components for the aircraft industry, Amweld® possesses special knowledge and techniques for forming, welding, and machining of assemblies. Fabricating of aluminum, titanium, stainless, and heat-resistant alloys is a major part of this work. Experienced metallurgical and engineering staffs, plus a skilled work force, make up this team of fabricating specialists which is available to you on a subcontracting or experimental work basis.

If you would like to obtain complete information on the capabilities of American Welding and how we can be of assistance to you—phone or write today. Our local representative will be happy to call and discuss your requirements.

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AMERICAN WELDING

Write for complete information.
NEW 20-page catalog of Amweld Rings, Bands, and Welded Assemblies.
NEW booklet entitled, "HOW AMWELD FLASH BUTT-WELDED RINGS ARE PRODUCED."

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Hydraulic Power

Hydraulic pumps, motors and controls are available for service up to 5000 psi. A bulletin gives details. (Denison Engineering Div., American Brake Shoe Co.)

For free copy circle No. 23 on postcard

Feeder, Counter

A centrifugal type parts feeder is outlined in a data sheet. The unit feeds, orients and counts to 400,000 items an hour. (U. S. Engineering Co.)

For free copy circle No. 24 on postcard

Electric Motors

Half a century of growth—from a small ground-floor location in Los Angeles to a nationwide and international manufacturing and sales organization—is being celebrated by an electric motors firm. A 50th anniversary brochure is now available. (U. S. Electrical Motors, Inc.)

For free copy circle No. 25 on postcard

Work Benches

Work tops are available in steel, Masonite on steel, Masonite on wood, and laminated hardwood in a new line of industrial furniture. Standard top sizes are 5- and 6-ft with 30-in. widths. A bulletin illustrates the line. (Angle Steel, Inc.)

For free copy circle No. 26 on postcard

Steel Structures

Details of recently developed engineered steel buildings in color are contained in a brochure. Blue green, bronze, rose, gray, white, and standard metal finishes are available. Buildings aren't painted but have a two-layer protective coating of vinyl-aluminum. (Stran-Steel Corp.)

For free copy circle No. 27 on postcard

Heat-resist Alloy

A technical paper reprint deals with Croloy 15-15N, an austenitic heat-resistant alloy for severe tubular application at elevated temperatures. (Babcock & Wilcox Co.)

For free copy circle No. 28 on postcard

Closed-circuit TV

An 8-page brochure pictures many jobs that can be done by industrial television equipment. It shows a comprehensive line of cameras, control units, monitors, accessories, and projection systems. (General Precision Lab.)

For free copy circle No. 29 on postcard

Presses

Single point, eccentric gear presses are featured in an 8-page bulletin. Capacities are 100 to 1800 tons. (Federal Machine & Welder Co.)

For free copy circle No. 30 on postcard

Vacuum

Principal features of one maker's gate-type high vacuum valves are described in a data sheet. (F. J. Stokes Corp.)

For free copy circle No. 31 on postcard

Casters, Wheels

Industrial casters and wheels are listed in a 44-page catalog. (Albion Industries, Inc.)

For free copy circle No. 32 on postcard

Hydraulic Presses

Four-column hydraulic presses are outlined in a bulletin. (A. B. Farquhar Div., The Oliver Corp.)

For free copy circle No. 33 on postcard

Wire Cloth

A new sample kit illustrates a wide range of wire cloth available. It provides a quick, convenient reference to various types and weaves.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 9/4/58

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FREE LITERATURE

Materials include brass, aluminum, monel, pure nickel and stainless steel. (Michigan Wire Cloth Co.)

For free copy circle No. 34 on postcard

Motors

Enclosed "pancake" motors are described in a bulletin. These motors, it says, are up to 60 pct shorter than standard ones. (Louis Allis Co.)

For free copy circle No. 35 on postcard

Gear Couplings

Flexible gear couplings are subjects of a reference manual. (Sier-Bath Gear & Pump Co.)

For free copy circle No. 36 on postcard

Filtration

Sub-micron filtration can save metalworking firms money, points out a brochure. It tells 12 ways metalworkers can cut costs. (Alsop Engineering Corp.)

For free copy circle No. 37 on postcard

Blower Units

Blower units for use in air-conditioning and warm-air heating equipment is described in a 4-page bulletin. (Torrington Mfg. Co.)

For free copy circle No. 38 on postcard

Lift Trucks

A 16 page industrial truck guide shows how to set up handling systems. It considers specific plant layouts and kinds of products. (Automatic Transportation Co.)

For free copy circle No. 39 on postcard

Box Closure

Specially prepared for fibreboard box and package users is a new box-closure guide. It suggests ways you might step-up efficiency of closure methods. (Acme Steel Co.)

For free copy circle No. 40 on postcard

Tube-type Motors

Tube-type motors covered in a bulletin have capsule-mounted split-sleeve bearings. They come in standard and explosion-proof designs. Ratings: 40 hp at 600 rpm to 800 at 3600. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 41 on postcard

Job Shop

An engineering company shows its capabilities in a 24-page color brochure. The firm handles precision outside engineering, manufacturing, machining and assembling jobs. (For free copy write on company letterhead to Lambert Engineering Co., 1100 Mackland Ave., St. Louis 10, Mo.)

Strip Oiler

A bulletin introduces a new standmounted, strip stock oiler. The unit lubes strip on its way to a press at any height. It handles various gages and widths. (Stamping Specialty Co.)

For free copy circle No. 42 on postcard

Filmed Data

A report by Bell Telephone Labs. on drafting standards for microfilmed engineering drawings is available. (Filmsort Co.)

For free copy circle No. 43 on postcard

Heat Control

Temperature controls are discussed in new literature. It reviews controls for ovens, baths, environmental test chambers, etc. (United Electric Controls Co.)

For free copy circle No. 44 on postcard

Antifoams

Antifoams reviewed in a 4-page bulletin control foaming and carry-over in steam boilers. (Hagan Chemicals & Controls, Inc.)

For free copy circle No. 45 on postcard

Thermocouples

Miniature thermocouples listed in a 28-page catalog come in four basic designs. Gasket, bayonet, protected and shielded ones are included. (Thermo Electric Co., Inc.)

For free copy circle No. 46 on postcard

TRAVEL ROUTE: Path of U. S. iron and steel mission's tour of Soviet steel centers, May-June, 1958.

The Russian Steel Industry

Its Growing Power Poses Problems for the West

Report from Russia, Sec. 1

By G. F. Sullivan, Editor, The IRON AGE

Special report from inside Russia reveals technology good in some areas, weak in others, sheds new light on labor relations.

Personal contacts show a people friendly to the U. S. but determined to overtake the West in living standards.

▪ As a taxpayer, you devote a substantial part of every working day to staving off nuclear war with the Soviet Union. By maintaining the power of massive retaliation we have sharply reduced the chances of all-out war.

By exchanging good will missions between the two nations we may be moving toward easing the sort of tensions that could lead to all-out war.

But international communism has in no way altered its goal of world domination. It has merely decided that if it can not achieve it by one means, then it must try another. That other is of course war on the economic front.

If we are to counter this second threat we must know more of Russia, its people and its key industries.

Certainly there has been much propaganda and many ridiculous claims of "inventions." But beneath the sound and fury the Russians have been making some important industrial strides.

Unlike the missile field, Russia is not ahead of the United States in steel technology. But she **is** strong in some sectors. Those are reported upon in the following pages, not in an alarmist vein, but to show that behind the bluster and the propaganda there is a solid growing industrial power. It is a power worth knowing about and watching because it involves your future.

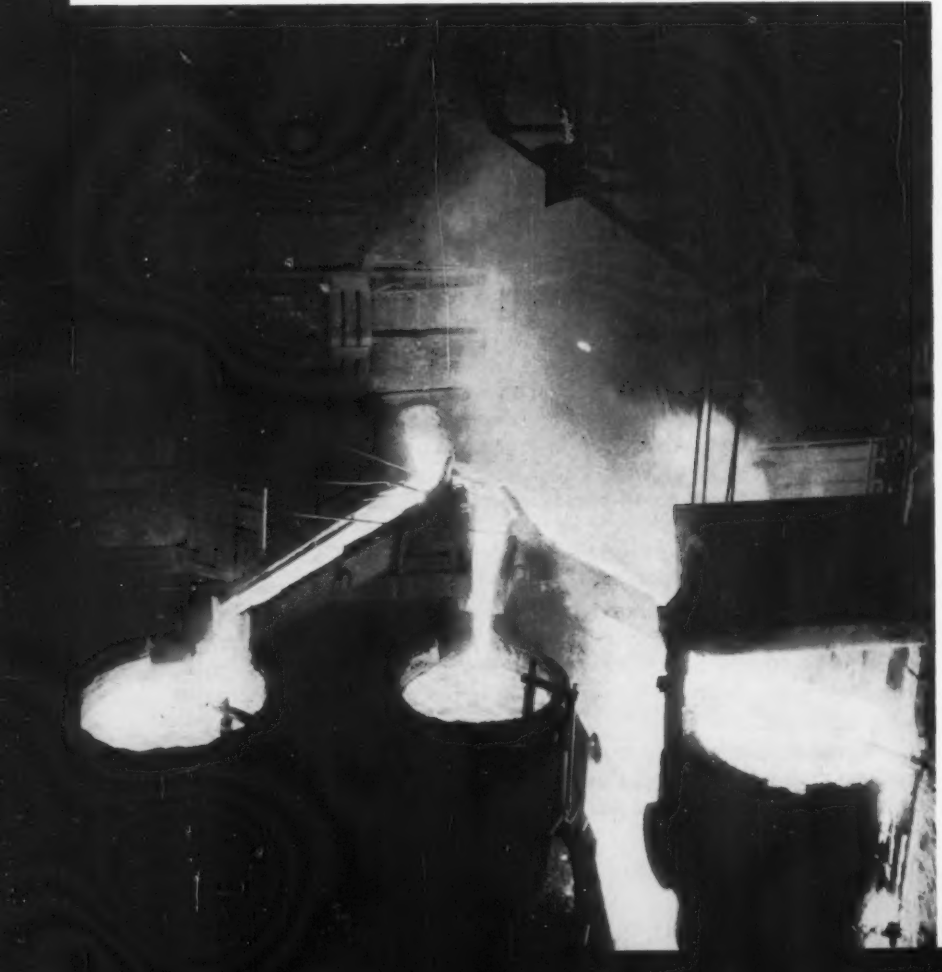
CRASH PROGRAM: Cranes like this dot Soviet city skylines in drive to build worker housing . . .

. . . **BUT** steel scarcity for home use has not halted export drive, which last year topped 2 million tons.

Report from Russia, Sec. 2

The "Trade-Aid Time Bomb"

How Strong an Industry Backs Russia's Economic War?



"Steel is King" in the Soviet Union as all resources push to boost production.

Behind the trade-war threats lies a potent force with which the West must reckon.

▪ The free world can no longer afford to ignore the growing power of the Soviet steel industry. By assigning it a top priority, the Soviet Union has more than tripled its steel production in the past 10 years. Russia's 1957 production was just about half that of the United States. And in several areas its technology is very good, well worth the attention it recently received from an official American

RUSSIA EXPORTS TECHNOLOGY: U. S. visitors to Russia saw double heats tapped into two ladles. This photo reportedly shows Taiyuan plant, Shansi Province, China, tapping 135-ton heat into three ladles.

mission to principal USSR steel centers.

Just because the East and West have arrived at what many experts believe is a nuclear stalemate—at a cost to U. S. taxpayers of $308 billion since 1950—is no reason to relax our concern over the Soviet Union.

Second front—On the contrary, we must prepare now to fight for survival in a new dimension—economic war. Fear of a shooting war and an intense desire for peace are genuine, intense emotions in the Russian people.

But they are equally determined to achieve a living standard superior to ours. Their entire resources, human and material, are dedicated to this end. They are on a war footing, with labor, management and government united in the effort.

Time-bomb — Directly coupled with this effort is the Kremlin's goal of communizing the whole world. One of its major weapons is what Secretary of Commerce Sinclair Weeks has called a "trade-aid time bomb . . . more dangerous . . . than the atomic missile threat." He added:

"Economic warfare, energetically pursued by Moscow could result, if unchecked, in eventual Communist domination of vast new areas of the globe. . . . The hammer and sickle could win without shedding a drop of blood in battle."

SOVIET STEELWORKERS: They're enthusiastic in their desire to serve the interest of the state, are willing to learn, to try new techniques.

Or listen to Henry Cabot Lodge, U. S. Ambassador to the United Nations:

Lodge is concerned — "Khrushchev said only a few months ago:

Background of This Report . . .

■ The first United States mission to visit the Soviet Union under the exchange agreement signed by the two countries last January issued its official preliminary report this week. This IRON AGE report is based on my experiences and observations as a member of the mission. Its publication coincides by agreement with that of the official general report of the mission.

However, the material presented here is not necessarily identical with that of the official report. Nor are the opinions expressed here necessarily those of any individual members of the mission.

The delegation toured the USSR from May 23 to June 21, 1958, covering some 8000 miles, and was usually divided into groups of specialists to examine steel mills and iron ore mines.—GFS

The delegation: E. L. Ryerson, director and former chairman of the board, Inland Steel Co., Chicago, (Chief); J. A. Stephens, vice-president, U. S. Steel Corp., (Deputy Chief); J. B. Austin, administrative vice-president, Research and Technology, U. S. Steel Corp.; F. S. Eckhardt, assistant general manager, Lackawanna Plant, Bethlehem Steel Co.; M. O. Holowaty, chief research engineer, Research and Development Dept., Indiana Harbor Works, Inland Steel Co.; S. M. Jenks, administrative vice-president, Central Operations, U. S. Steel Corp.; E. L. Joppa, general manager, Lake Superior Iron Mining Div., Pickands Mather & Co.; K. C. McCutcheon, Armco Steel Corp.; N. B. Melcher, chief, Pyrometallurgical Lab., U. S. Bureau of Mines; G. Mohling, chief metallurgist, Research Lab., Allegheny Ludlum Steel Corp., Brackenridge, Pa.; F. M. Rich, general manager, Indiana Harbor Works, Inland Steel Co.; E. C. Smith, director of research and chief metallurgist, Republic Steel Corp.; J. H. Strassburger, director research & development, National Steel Corp.; I. H. Such, editor-in-chief, *Steel*; G. F. Sullivan, editor, THE IRON AGE; D. N. Vedensky, director of research and development, M. A. Hanna Co.; M. F. Yarotsky, division superintendent, Steel Production, South Works, U. S. Steel Corp.; Prof. M. G. Clark, Cornell University; Col. M. R. Thompson, secretary, Foreign Relations Committee, American Iron and Steel Institute. The visit of the American delegation was organized by the American Iron and Steel Institute.

'We declare war on you—excuse me for using such an expression—in the peaceful field of trade. We declare a war we will win over the United States.' And again recently he said: 'To the slogan "Let us arm," we reply with the slogan, "Let us trade." '

"No dictator ever warned his intended victim more clearly than that. Not tomorrow but today, this very minute, we are in an economic struggle which Mr. Khrushchev describes as a war, with the Soviet Union.

"Meanwhile, time and time again, Khrushchev made it clear that, while his methods were new, his air was unchanged. 'History is on our side,' he said. 'We will bury you.' "*

Leningrad subway . . .

. . . is probably the world's most beautiful. This magnificent system with its marble walls and moving stairs, its vaulted ceilings and elaborate chandeliers was built while thousands of citizens lived above it in miserable hovels and war-damaged buildings. Proof of the Soviet export potential — it shows how the state merely turns a valve to direct its efforts where it wants them.

Progress in steel—What of this nation whose leader has promised to bury us when it wins? Perhaps you have not heard that many Soviet blast furnaces produce at least 30 pct more iron per day than most American furnaces of comparable size. Or that tap-to-tap time in many Russian openhearths is about 25 pct less than standard U. S. practice. These facts in themselves mean little without the background which will appear later in this report. But they suggest that we are not dealing with something that is all froth and no substance.

If Russia is to wage economic war she must have powerful industries to make the export goods she'll need to win the uncommitted nations of the world. Just how good are her industries? And don't the Russians need all the iron and steel and machine tools they can get to build up their own living standards?

Tools pose problems — The Soviet Union is now producing machine tools at the rate of 133,000 units a year. She made 125,000 in 1957—or just about as many as the United States and Great Britain combined. East Germany's tool builders are thriving. Czechoslovakia, a German arsenal in World War II is exporting at above the pre-war rate. Other satellites, including China, are moving ahead in this area.

Russia has practically doubled its steel output in the past seven or eight years. It made 56 million net tons of ingots in 1957, or about half the U. S. figure. One plant alone, Magnitogorsk, made more than 6.5 million net ingot tons last year. Plans are to push this plant up to 12 million tons by 1960 and for the entire nation, to make between 110 and 130 million net tons by 1972.

Facts or fancy? — Along about now, the reader begins to wonder if the American visitors were taken-in, if Soviet production figures are exaggerated. He wonders if the reported desire for peace is genuine, knowing the extent to which the Russians can go—and have gone—in fixing up "Potemkin Villages" to impress visitors.

When a group of experienced steel operating men go through a steel plant—and are allowed to go anywhere in that plant they wish—they will come up with an accurate estimate of that plant's capabilities.

Few doubts remain—The Soviet steelmakers brought out blueprints to clarify any point the group inquired about. There was little question of the size of heats being tapped, or of tap-to-tap time; sufficient time and effort were spent to be reasonably certain of this data.

At one point a senior member of the American delegation, seeing an openhearth down for repairs, decided to inspect the roof. He was making fair, though risky, progress up the front wall when two Russians ran at him shouting and waving him off. He came down in a hurry. While the interpreter was translating "Very Dangerous!" the Russians brought a ladder so he could go up without risking his neck. There he checked the roof in detail, picked up a sample of the brick used. And he brought it back to the USA for analysis.

"Granted that a sort of kinship based on common problems developed among the steel men of the two countries, how do you know the people are opposed to war and want to be friendly with America?" is the next logical question.

The answer is—There are any number of ways for 19 men who traveled some 8000 miles in Russia, met hundreds of people in all walks of life—and saw thousands more in welcoming crowds—to be quite certain on this point. It can be documented with dozens of specific cases.

Exchanges of missions such as this, and others that have since been made and will apparently continue, may help ease the tensions between the two nations. This is a hope that will take time to prove.

Meanwhile, the free world must address itself to the economic war now going on by learning as much as possible about Russia and its people, its system and its industries.

During the past year Russia dumped some 17,000 tons of tin onto a disorganized market; and enough aluminum to knock U. S. prices down 2¢ a pound.

Soviet and satellite machine tools and mill equipment are invading world markets at cut prices. She has dumped pig iron and manganese. Iron ore may be next. After that—whatever she thinks will do the politico-economic job she intends to do.

* *Henry Cabot Lodge, Dayton, Ohio, May 16, 1958.*

World's Largest 'Steel Corp.'

Has New Management, Huge Reserves, Good Research

Soviet Steel, a relatively young "company," has borrowed western techniques — and in some cases improved upon them.

Its research is integrated, respected, effective. Iron ore reserves are perhaps the world's largest; coal deposits are huge. But both are in remote spots.

Its labor force got a raise last year—and shorter hours.

▪ The Soviet Union, operating the largest "steel company" in the world, produced some 56 million net tons of steel ingots last year, or just about one-half the United States 1957 output. Soviet steelmakers expect to pour nearly 60 million ingot tons this year, have set a target for 1972 of between 110 and 130 million net tons.

They borrow well — In many ways, their physical equipment is not unlike that of an American plant. Russian managers and technicians have shown a remarkable aptitude for copying the better equipment and operating practices of the West.

The Soviet steel industry is relatively young: Most of its plants date back only to the thirties. In some cases those dismantled or damaged during the war have been completely rebuilt. So, except for most of its rolling mills, the melting and heating facilities are relatively new. This means that Russian steelmakers have been able to use many fairly recent developments, and add significant improvements of their own.

Trend of expansion—Because of the location of raw materials, steel expansion is heading eastward. This trend has not been as fast as planners had hoped, and the fact is that most recent new capacity increases have come in the older steelmaking areas of the west.

Iron Ore—Russia possibly has the world's largest reserves of iron-bearing materials but it will take a lot of experimentation, planning and money to bring much of them into efficient production. Most are low in iron content; many are objectionably high in zinc, arsenic, sulfer and silica.

Despite much mine mechanization, production per employee is below that of the United States. But in some cases, as explained later in this report, beneficiation of low grade ores has worked out very well.

Based on USSR data, known reserves were set at 35.9 billion net tons in 1957, with average content of 37 pct Fe (dry basis). Some 5 billion tons, which average 55 pct Fe, are said not to need beneficiation. Easily beneficiated ore amounts to 19.6 billion net tons (average 31 pct Fe); hard-to-beneficiate ores total some 11.3 billion tons averaging 36 pct Fe.

Coal reserves — While Soviet Union coal reserves are probably among the world's largest, 75 pct of them are in Asia—far from the furnaces of the Urals, and the Ukraine where most Soviet steel is made.

District Councils . . .

. . . work with individual plants developing quotas, setting management bonus targets, pushing housing, overseeing trade union activity in each district. Example: In Chelyabinsk area the district director for ferrous industry bosses Magnitogorsk, Chelyabinsk and other steel plants in the district. His boss is Chelyabinsk district Sovnarhoz chairman, who heads up all industry in that district.

All coal for Chelyabinsk in the Urals for instance, is hauled 1200 miles from the Kuznetsk basin in mid-Siberia. At nearby Magnitogorsk, some 65 pct of the coal comes about the same distance from the same place; the balance is

Distribution of Finished Steel

Russia ("Present") Product	Percent	United States (1957) Product		Percent
Rails	2%	Rails & Accessories		2.9%
		Bars (inc. tool steel)	14.1	
Bars & Structural	60	Structural	9.2	23.3
Tubes	14	Pipe & Tubing		13.6
		Wire & Wire Products		4.2
		Flat-rolled	39.4	
Wire & Miscellaneous	5	Plates	11.6	51.0
Flat-rolled & Plates	19	Semifinished		5.0

Steel Goals are Lofty

Production and targets, millions of net tons	1956	1957	1972 Goal
Iron ore, prepared	86.1	92.8	275 (raw)
Pig iron	39.5	40.8	83- 94
Steel	53.6	56.2	110-124
Rolled steel, incl. pipe	41.9	44.3	94
Pipe	4.3	4.6	
Coke	50.6	53.6	128*

* Goal as of 1970.

hauled 700 miles from Kazakhstan.

Steel centers — There are three main steelmaking areas in the Soviet Union. One runs north and south some 500 miles along the eastern slopes of the Urals. There are nine integrated plants here including Chelyabinsk and Magnitogorsk. A second steelmaking axis extends eastward into central Siberia and includes the Kuznetsk Works at Stalinsk. The third area comprises the Dnieper and Donetz basins of the Ukraine, in Western Russia. It includes plants at Zporozhye and Krivoi Rog (see map on first page).

Upheaval — Few outside the Soviet Union realize the extent and nature of recent changes in steel management, organization and labor that have occurred during the past year or so.

Moscow's errors . . .

. . . led to decentralization of industry during 1957. Moscow bureaucrats couldn't know local problems; individual errors at top level were imposed on all industry units and proved costly. New setup puts control in District Economic Councils (Sovnarkhoz) in each of some 103 regions. DEC is responsible to governing body of each republic, has deputy directors and staff for each major industry in its area. Overall plans, long-range targets, wages and allocations are still set in Moscow.

Some were forced by the growing size and complexity of the industry. Russia entered World War II with a little less than 20 million net tons of steel capacity, emerged with 1946 production at 13.4 million tons. By 1950 the figure was close to 30 million tons. Seven years later—in 1957, it had nearly doubled.

Organizational change — Where once the industry was run entirely from Moscow, it is now operated through the District Economic Councils in each major steelmaking area. There are about 103 of these councils which supervise all industry in their districts. They are responsible to Moscow, which also provides research and other staff functions for steel.

New deal for labor — Sweeping changes in wages and hours accompanied the organization changes of 1957. Communists know they must supply enough fuel to run their machine.

In a bold move designed either to mollify labor or to improve steel production, the workweek was cut in 1957 from 46 to 40 hours. At the same time take-home pay was increased 12 to 16 pct. The move apparently accomplished both objectives. Production increased and labor seems to be satisfied.

Role of Research — It is impossible to overstress the importance of research in Russia. The socialist system integrates education, research and production. It can direct brainpower into the top priority areas and disseminate results quite rapidly.

Example: Three research institutes (one in Leningrad alone has 700 workers) are concentrating on mining and beneficiation of ore—one of the industry's major problems.

Big pilot plant—The industry's pilot plant—Nova Tula near Moscow—has blast furnaces and an openhearth, a small electric furnace and an oxygen converter vessel. It also has a continuous casting unit which seems to work well but is not very fast. This plant tests new ideas, which if successful can be incorporated in designs for the entire industry.

Because the state knows its importance, research is well paid. More than this, it is respected. Soviet steelmakers are usually willing to listen to and try new ideas

Export threat—The Soviet Union has an annual steel capacity of about 60 million net ingot tons. There are some 18 million tons in the satellite countries of Czechoslovakia, Poland, Hungary and East Germany.

The American delegates concluded that probably 80 pct of USSR output now goes to industrial, power, rail and military needs. This leaves 20 pct to find its way to its citizens and to export. But if it elects to slow industrial expansion it could substantially increase exports.

Commercial aviation . . .

. . . like many other things Russian, is a study in contrasts. The Russians are justifiably proud of 50-passenger TU-104 jet, which does about 550 mph, cruises at 30,000 ft. It has food service, uniformed stewardesses, semi-private rooms. The next commercial ship is the 18 to 24 passenger Ilyushin, the twin-engined unpressurized workhorse of Aeroflot, the USSR airline. DC-3's have been relegated to short local runs. There are no tourist rates and the baggage allowance is 22 lb.

Steel Technology Is Good

Russians Emphasize Melting, Lag in Rolling

Blast furnaces are efficient, openhearths highly productive. Long runs on plain carbon steels help improve output.

Ore preparation is key to blast furnace success; much handling equipment, double heats, feature openhearth operations.

Electric furnaces lag but some oxygen is used. Continuous casting will be expanded.

Report from Russia, Sec. 4

▪ Almost any American steel mill operating man would give both eye teeth to have some of the advantages enjoyed by his Russian equivalent—if he didn't have to live in Russia and under Communism.

Production is king: He can order practically anything he wants if he can prove that it will increase output or reduce production delays. He may not always get it because mill equipment deliveries are behind schedule and new plants have priority.

Once the equipment is installed, amortization rates are so low they can almost be ignored. Good wages and high living standards for American steelworkers leave a narrow margin for return on investment. Low wages and living standards leave Russia a lot of room to maneuver in this area.

No Labor Pains — His labor force is with him. He's a member of the union too—so all elements in the plant are dedicated to increasing production and avoiding waste. There are no demands for higher wages and fringe benefits. There are already plenty of the latter, and wage rates are set in Moscow. He has elaborate equipment for training new workers.

He's never had a strike and he doesn't ever expect to have one. His workers feel that strikes would hurt them as much as the management. Strikes are "impractical."

No Schedule Problems—He has only one customer, Gosplan in Moscow. This customer places his orders a year ahead of time, makes minor changes quarterly. And his requirements for analyses and sizes are simple. Result: he can run a furnace for weeks, perhaps months, on one grade of carbon steel; and he can roll his mills for a long

DOUBLE STOPPERS: Like double heats, some Soviet shops save time with double stoppers, though second is not in use here.

Plant safety . . .

. . . is very poor by U. S. standards. Only welders, scarfers, etc., wear goggles; there are no safety goggles. Lack of safety shoes, few machine guards and hard hats add to the toll. Lost-time accident rate at Magnitogorsk last year was 23 times more than the average for steel industry in the United States.

time without changing gage or width, much less rolls.

Furthermore, his customer is not fussy about surface finish, scratches, inclusions or polish. Most of the product is heavy plate, bars, and structurals where finish is not critical. He need not, in short, be competitive on products.

Some Troubles—True, he runs into some annoying delays in getting new equipment and he sometimes has his troubles in getting enough of the right kind of raw materials. His rolling mills are old and require a lot of maintenance, new ones are hard to come by. His ore mine equipment is usually inferior to American machines and his labor requirements per ton of ore and steel are high. And the ore is generally lower in iron and higher in impurities. Coking coal is also a problem.

But his plant is well laid out, was probably engineered by Americans in the thirties, or based upon one that was. A lot of money has gone into its modernization. Under the circumstances the outside observer would expect to see a shop with pretty good housekeeping, much instrumentation and automatic control, lots of materials handling equipment and high output rates.

Safety Slighted—This is what the visitor does see, though he may be surprised at lack of safety precautions and equipment. The number of women doing menial labor may shock him, so may the number of women operating rolling mills from well-equipped enclosed pulpits.

The American visitor may at first be inclined to call iron and steel making operations very efficient. But if he reflects that efficiency combines amortization charges with operating costs he may prefer to call these melting facilities very productive, instead. And in view of the problems the Russian steelmaker has had to overcome, his solution can also be called very effective.

To illustrate, shortage of scrap in the USSR means that two-thirds of the openhearth charge must be iron. Because most ore is low in Fe content it has to be beneficiated to be acceptable for the blast furnace. Russia has a shortage of metallurgical (coking) quality coal —so she had to go to sintering.

It's An Ill Wind—In overcoming these problems the Soviet steelmakers have come up with a good self-fluxing sinter. That, with other blast furnace refinements, means that most Soviet blast furnaces are more efficient than average practice in America.

In the United States, with plenty of good ore and coking coal, sintering was not important until recently. Now, as raw materials problems increase here, there are some 25 million tons of U. S. sintering capacity, a figure which will probably reach 65 million tons next year.

Here are some areas where Soviet technology is interesting. These are the areas which American steel makers will be watching when the detailed technical reports of the U. S. mission are compiled.

Blast Furnaces Are Good

Six factors contribute to high production of Soviet blast furnaces, often 30 to 40 pct higher than most American furnaces of comparable size. (Example of high production at Magnitogorsk, USSR's most efficient blast furnace plant: Four of its furnaces with 26 ft 4 in.-hearth diam and 48,000-cu ft working volume reportedly average 2500 net tons a day with average of 52 pct Fe in the Burden). These are the factors responsible for the good performance of Russian blast furnaces:

Self-fluxing sinter—This makes up 60 to 100 pct of the charge. Sinter is made by roasting ground ore and coke. Broadly speaking, you make it self-fluxing by adding limestone to ore and coke before sintering it.

High top pressure—It is used on four out of five Soviet blast furnaces. (In the U. S. the figure is about 1 out of 25).

Automatic control — Top pressure and blast temperature control feature some Soviet furnaces; most have automatic skip charging. Instrumentation is excellent.

Controlled blast moisture—Steam injection, similar to good U. S. practice, holds moisture fairly constant.

Uniform high blast temperatures —They run to 1650 F, about a third higher than U. S. practice.

Continuous full wind blowing— Wind is not interrupted during casts. This is believed to be possible because of a special long-life mixture of fire clay, coke breeze and pitch in the iron notch and the trough. The latter is relined only about once a week.

The benefits of all these techniques, particularly the use of self-fluxing sinter, are greater than the sum of the individual techniques applied separately—a case where

Anti-waste drive . . .

. . . is typified by sign at a blast furnace in Siberia: "Comrades! Lowering Flue Dust by 1 pct Means a Saving of 16,000 Rubles a Month!" And propaganda by another on a coke battery: "Long Live the Great Soviet People — Builders of Communism!" (It is 30 ft long and 5 ft high). Others exhort workers to increase production.

the whole is greater than the sum of its parts.

High-Output Openhearths

Several interesting practices contribute to a Soviet openhearth tap-to-tap time about 25 pct less than standard U. S. practice. There are two qualifications: (1) Most steel is produced in long runs on common carbon grades; and (2) a tremendous amount of materials handling equipment is used.

The latter is interesting, if not instructive, to a company that must earn a fair return on equipment. Example: One shop with ten 220-ton and two 440-ton furnaces and two mixers has six charging machines and seven pit cranes. This permits two machines to charge a furnace at once, leaves ladles available the minute a heat is ready to tap. It is about twice the handling equipment of a typical U. S. shop.

More instructive is the use of very deep baths in some shops (up to 49 in.) to produce double heats which are tapped into two ladles. Some ladles have two stoppers. A double heat is produced in less than three-fourths the time required for two single heats. Pouring ingots is, of course, faster too.

Perhaps the biggest factor in keeping production up in Soviet openhearths is the use of all basic furnaces with suspended sprung roofs using chrome-magnesite brick. They are said to get 600 to 700 heats before relining one of these roofs in a 210-ton furnace and 450 to 500 heats in a 420-ton furnace. This is three to four times the life of the silica brick roof used in most U. S. openhearths. A similar roof design was developed in the U. S. earlier this year but chrome, native to Russia, must be imported here—and it is expensive.

An aid to longer roof life is the Soviet practice of never letting roof temperature drop below 2700°F throughout the campaign.

Electric furnaces—This area lags behind other Soviet technology and is considerly below U. S. standards.

ENGINEERING DRAWINGS: U. S. delegation often checked drawings and flow charts to clarify points of design or material flow.

Reasons are believed to be a shortage of power coupled with the heavy emphasis on plain carbon steel for capital goods and construction.

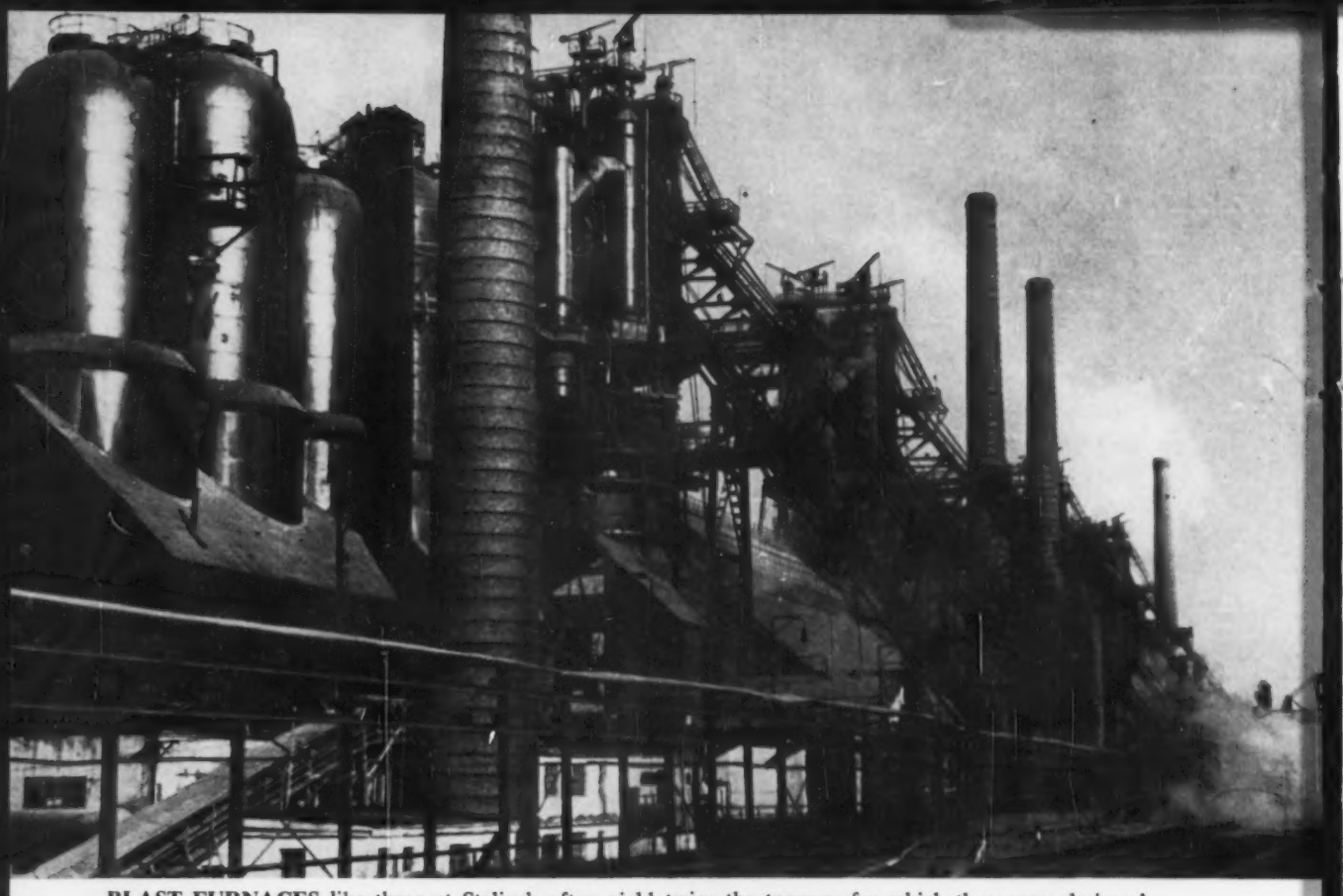
Use of oxygen — Unlike some U. S. practice, use of oxygen in blast furnaces is still in the experimental stage. There seems to be a shortage of oxygen production machinery. There is no uniformity about use of oxygen in the openhearth, though it is used for both air enrichment and carbon removal. More mills would use it "if they could get an efficient oxygen plant that was not too expensive."

Oxygen steelmaking—This (LD) process is used at Krivoi Rog, though the vessels are smaller than those used in the United States. They are planning units at two more plants but don't expect oxygen steelmakinug to exceed 10 pct of production by 1975.

Rolling mills—Most mills now in use are about like those installed in the U. S. some 25 years ago. Bottlenecks at builder's plants are holding up many new mills. Pre-war mills are mainly German-built, later ones were made in Russia. A 98-in. 5-stand cold strip mill now going in at Magnitogorsk is almost a duplicate of an American mill.

Here, as in the openhearth shops, the Russians use a lot of capital equipment—cranes and reheating furnaces—to keep production delays at a minimum.

Continuous casting—Contrary to the opinion of some American politicians, the Russian have not yet gone overboard on continuous casting. In addition to a modest pilot plant unit at Nova Tula, near Moscow, the Russians are said to be operating one commercial unit at Sormov Works in Gorki. Others seem to be in prospect but opinion on how many is mixed depending upon personal opinion of various steel officials. Two more commercial units are now definitely planned and there is talk of another 10.



BLAST FURNACES like these at Stalinsk often yield twice the tonnage for which they were designed.

Russians Plan Big Expansion

It Will Be Based on Larger Conventional Units

They study direct reduction and continuous casting but actual plans call for bigger blast furnaces and openhearths.

Steel goal is to add 11 million tons in three years.

Mining, ore beneficiation have high priorities.

Report from Russia, Sec. 5

■ Russian steel capacity expansion is following conventional lines: some through new plants, some by adding to or modernizing present plants. The short-range target is to increase output from an expected 59 million net tons this year to 70 million tons in 1960. The 1972 target is 125 million net tons.

Most of the expansion will be based on conventional coke ovens, blast furnaces, openhearths and rolling mills. While they are studying direct reduction and have made a modest amount of steel by continuous casting their main drive will be based on more and larger conventional equipment.

New plants—Two new plants are said to be under construction now. One is a 4-million net ton mill near the Karaganda coal basin, about 700 miles southeast of Magnitogorsk. The other is a 3.5 to 4-million net ton mill which is being built 10 miles west of Stalinsk. (This new-plant information comes from an apparently reliable source in Moscow. Though only 10 miles from the reported site the American steel delegation could not there confirm rumors of it).

Site preparation is said to be under way for a third new integrated mill some 1200 miles east of Stalinsk, near Lake Baikal. This is to have a capacity of about 4.5 million net tons a year. Its site was chosen because of recently proven coal and ore in the vicinity, nearness to a forthcoming new hydro power station and to the shipyards of the

Pacific which can use its sheet and plate. Later it will make structurals.

More blast furnaces—Seven new blast furnaces are due to come in this year. It appears that five will be giants which, on the right burden, are slated to produce 3000 net tons a day. They'll have a hearth diameter of 29.8 ft and a volume of 60,680 cu ft. They will use carbon hearths and carbon boshes, but all-brick stacks above the mantle. Automatic, control, high top pressure and other output-boosters are included of course.

Not satisfied with this, plans are that furnaces built from now on will have 34.4 ft hearth diameters and a volume of 77,660 cu ft. The first one, which is supposed to be operating in 1960 will carry carbon up the stack some 16 ft above the mantle. Design of the stockhouse will be fully automatic, with no men needed. Rated capacity? 5000 net tons a day.

Plant expansion—Magnitogorsk, Russia's showplace mill in Siberia, will be expanded from its present 8 million net tons to 12 million tons a year by 1960. Three blast furnaces, in addition to the 3000-net ton a day unit now going in, will be installed at Chelyabinsk in the Urals. The Krivoi Rog plant in the Ukraine will apparently be increased by 2.2 million net ingot tons. New blast furnaces are slated there.

Electric furnaces — The Soviets are planning a single power grid in European Russia based on hydroelectric and fossil fuel plants. A second grid is to cover central Siberia.

Desire for peace . . .

. . . is universal, genuine on part of Russian people. Basis: 12 million Russians died in World War II, many behind the lines from cold and starvation. Few realize that West also wants peace, though not at any price. Cause: censorship, the iron curtain news barrier.

Shortage of electric power to date has held back electric furnace development as well as oxygen-making machinery. It explains the "Turn out the lights!" signs visitors see everywhere. When power is available, existing plants will get some large (220 net ton) electric furnaces.

Big openhearths—As part of expansion plans, 550-net ton furnaces will be built along lines similar to present practice. They will be double-heat furnaces with chrome-magnesite brick roofs and will use double-stopper ladles. Oxygen will probably be used for combustion only—not for carbon reduction—where it is available.

More LD Process—Oxygen steelmaking vessels with capacities to 77 tons (about the same as U. S. practice) will go in at Krivoi Rog, at the new plant near Stalinsk and at Lake Baikal.

The Chinese Abacus . . .

. . . is used almost everywhere. Cash registers and adding machines are in extremely short supply. So the abacus is used in most shops, post offices, hotels, etc. You'll even see them in laboratories—which also have modern computers and calculating machines. Shop clerks, in absence of registers, toss money into boxes or drawers. Changemaking is a "searching" operation.

Continuous casting—As noted in the previous section of this report, two continuous casting units are planned, which will make a total of three commercial units. One will work with two 80-ton electric furnaces and will probably consist of two units to make transformer steel. The other is slated for Stalino, in the South, with a capacity of 200,000 tons of billets and slabs a year.

Direct reduction — Like steelmakers the world over, the Russians are working on elimination of the blast furnace while they design new and larger blast furnaces. Based on an interview with a top industry scientist, their efforts now seem aimed at using either oxygen converters or jets in an openhearth.

The Party line . . .

. . . on Hungary hasn't changed. In an interview before the recent murder of Nagy, V. V. Grishin, president of the 50-million member All Union Central Council of Trade Unions, explained that he had visited Hungary after the 1956 revolt: "The people of Hungary thanked me for the help extended them by the USSR in helping them suppress the fascist counter-revolutionaries." Usually, Russians not directly in government service "prefer not to talk about Hungary."

Rolling mills—Present mills will be up-dated with heavier individual drives and more automatic controls. More sheet and strip mills are coming along to improve output of consumer goods, including tinplate. These will follow American practice. Some continuous bar mills will replace present antiquated hand mills.

Now under construction at Magnitogorsk are 98-in. hot and cold strip mills. Delegates were also told of designs for larger coke ovens and a 1000-metric ton openhearth.

More ore needed—Since much of the Soviet steel industry now relies on inferior ore, beneficiation has a high priority. Some present units could stand modernization but they'll have to wait until new plants catch up. Plans now call for six new magnetic concentrating plants with capacity of 30 million tons of ore concentrates a year.

Besides this sort of activity there is a drive on to boost output of the high grade ores in the Krivoi Rog, Kerch and Kursk areas. New open pit and underground mines in the Kursk area are to be developed to yield at least 15 million tons a year.

The Industry Has its Problems

Most serious: Rail network is badly overloaded.

Coal and iron quality are poor. Ore mines need much work and capital. Beneficiating equipment is in short supply.

'Pravda' blasts equipment builders for delaying rolling mills and other facilities.

Five-year plan is shelved; a new one is due soon.

▪ While Russia's steel technology is good in several areas it is by no means certain that the production goals listed earlier in this report will be met on time.

The country is large—Two and a half times the size of the United States in area, with a population of some 200 million. Its 1972 steel target of perhaps 120 million net tons is less than current U. S. capacity, but it is a big goal in view of some of the enormous problems its planners and its steelmakers face.

Size is a problem — Russia's geography and the location of its raw materials create some problems. Others are a matter of organization.

Its huge reserves of iron ore and coal are low in quality, and most of them are in the wrong places.

Target missed—Not enough iron ore, coupled with delays in steel plant equipment caused steel output to fall short even of the revised five-year (1956-1960) plan targets. Rolled steel output met the tonnage goal but not the product-mix goal because heavy sections were emphasized. So machine builders did not get the types of steel they needed to furnish steelmaking equipment.

Result: This five-year plan was dropped and a 1958 plan substituted. A seven-year (1959-1965) plan is due at any moment. The Russians will tell you that targets are always set above expectations to provide incentive.

Here are some of the problems the industry faces:

Railroads overloaded—The most serious problem facing the industry is the fact that the railroad network is overloaded. This is due to the enormous distances between raw materials, mills and finished goods users. And much of it requires cross-hauling.

Coal is poor—Russia is short of good coking coal. Some of the best coal is in the east, must be hauled 1200 miles or more to the coke ovens of many mills. To overcome this problem they are experimenting with pelletizing fine coal to help control its density in the coking process.

Low grade ore—A lot of beneficiation and sintering facilities now convert many low grade ores into satisfactory blast furnace material. But in terms of its lofty iron and steel goals the industry is acutely short on beneficiation facilities. And it needs equipment to develop mines quickly if Moscow's targets are to be met. In addition, there are problems with sulfur, arsenic, zinc and silica in various ores.

To quote "Pravda" (June 6, 1958): "The situation of building and placing in operation of a number of ore dressing plants and coke batteries is definitely unsatisfactory . . . at the Krivoi Rog ore dressing plant . . . the builders are insufficiently supplied with tools and special clothing, food supply is disorganized as well as the training of the new workers."

Mills are behind—Pravda also blasted authorities in Kazakhstan where a new mill is going up: "From the 422 automotive vehicles allotted for this construction only 75 were delivered, from 31 bulldozers only 2, from 41 power shovels only 11. The labor turnover is too high. As results, in the first four months only less than 10 pct of the planned yearly production was accomplished."

Rolling mills lag — "Radical means," says the same Pravda article, "must be used for speeding the delivery of the rolling equipment." It then lists six plants for which rolling mills are behind schedule and it names three machinery plants that "are in debt to the blast furnace builders."

New-Housing Drive . . .

. . . is an all-out affair throughout USSR to overcome shortage of living space, wipe out slums. Moscow alone is reported pushing a program now which will re-house 2 million. No one-family houses are included — apartments use less material per occupant. Apartments are largely of precast concrete, some reinforcing steel, little or no conduit. (Pipe and tubing are very scarce). At least 40 huge no-elevator apartments can be seen under construction en route from the city to Moscow's airport. A typical "good" apartment for a family of six contains two rooms, not counting kitchen and bath.

Incentive Systems . . .

. . . apply to labor and management. Both receive bonuses for fulfilling quotas and exceeding them. Typical sign at Chelyabinsk Works entrance: "Workers! Congratulations upon exceeding the quota for May 7-16 by 1513 tons!" Also, workers who excel have their pictures on bulletin boards both outside and inside plants. Top management bonus can be as much as 50 pct of base salary.

WOMEN: They make good mill operators, also do menial jobs, comprise 15-25 pct of steel's labor force.

Report from Russia, Sec. 7

The Soviet Steelworker

Well Fed, Ill Housed, He Drives Hard on the Job

Productivity is his goal. The union cares for him from womb to tomb. Social life revolves about work and the community.

Competition is a driving force. Education plays key role with promotion based on ability, not seniority.

His religion is Communism; the Party is supreme.

▪ The typical Soviet steelworker is healthy and well fed. He works a 40 hour week, gets incentive pay if his team makes its quota, and a further bonus as it is exceeded. He appears to be reasonably well satisfied with his lot because it is a great deal better than he or his father had some 10 or 20 years ago. Last year, for instance, his work week was cut and his take-home pay increased.

Like 50 million out of some 52 million Russian industrial workers, he is a union man. He pays 1 pct of his wages in union dues. The state, through his employer, adds another 8½ pct to the union treasury.

The Union's Main Goal — The first objective listed in the union constitution is: "The trade unions organize socialist emulation of workers and other employees to raise labor productivity to the utmost, to fulfill and overfulfill state plans . . . to improve quality and reduce production costs . . . to promote the introduction of advanced technology."

And if he should ever be inclined to forget this he is reminded by countless signs such as few American employers would dare erect in their plants: "Workers! Strive valiantly to overfulfill your quota," and "Comrades! Fight for Economy! Quality! Production!"

No Strikes—He does not strike for any reason—not even for higher wages. Wages are set in Moscow and he can't do anything about them; he can discuss grievances like working conditions and inadequate housing with the local committee-

men who will take them up with management.

We asked V. V. Grishin, head of the entire 50-million member All-Union Central Council of Trade Unions, why there are no strikes in Russia. "Because," he said, "here the worker is in power. He is interested in producing more and cheaper so as to raise his living standards."

Grishin observed that Soviet workers know that "Growth of industry will immediately affect the living standard of the workers." This may sound like unadulterated communist propaganda.

But it is true to the extent that the state wishes to share productivity. We saw plenty of evidence of hard work and frequent exceeding of quotas. The Soviet worker appears to be driven by a patriotic fervor of the type we saw in the United States during World War II. And in fact, Russia's people are on a war footing in their drive to increase living standards.

Some Benefits—Those standards can stand plenty of increasing. On one hand, the union takes care of most medical, hospital and vacation expenses. It provides nurseries, kindergartens, entertainment, sports events, summer camps, technical training and other fringe benefits.

In short, after boosting productivity, the union's second major purpose is stated as: "To take care of the worker from birth to death."

No Compulsion—No worker is forced to belong to the union. But in view of the obvious social and economic benefits, most (99 pct of industrial workers) are union members.

The average worker is lucky if his family of six has three rooms to live in. Many families have but two. There are few of the luxuries that Americans now consider essential parts of their living standards. Never having had them, the Soviet worker apparently doesn't yearn hard for them—yet.

What Things Cost in Russia

Item	Rubles	How much work to buy*
Bread, per lb	0.9	7 min
Butter, per lb	11.4	1½ hr
Potatoes, per lb	0.23	2 min
Cheese, per lb	10.5	1½ hr
Beef, per lb	5.5	42 min
Eggs, 10	7	58 min
Orange, one	2	15 min
Milk, qt	2.6	20 min
Meal in company restaurant	5	38 min
Men's suit	800–2000	2–6 weeks
Men's shoes, leather	156–415	3–7 days
Radio, portable	350–700	6–12 days
Vacuum cleaner, tank type	1400	1 month
Alarm clock	48	6½ hr
Aluminum cooking pot, 2 qt	9.5	80 min
Soap	2.5–5	20–40 min
Bicycle	660	2 weeks
Bicycle w/motor	1240	1 month
Moscova (very small car)	9000	6⅔ mo
Moskvich (35-hp, 2000-lb)	15,000	11 mo
Volga (65-hp, 3000-lb)	32,000	2 years
Zim (95-hp, 4000-lb)	40,000	2½ years
Rent, including utilities	Approx 5% of monthly wage	
Phone call, Siberia–N. Y. C.	120	2 days
Vodka, pint	25	3 hr
Camera, "folding Brownie"	520	8 days
Hotel, first class WO/meals	50	6 hr
Summer youth camp, per mo	75	9 hr
Cigarettes	1.5–4.5	12–36 min

* Based on average earnings of steelworker in North and East, i.e., 1350 rubles per month, including bonus, 40-hr week.

Steel Wages and Salaries

	Rubles per Month	
	Base	With Bonus
Minimum, unskilled worker		600–700
Maximum, skilled worker		3200
Average		1350
Ingot crane operator		2000–2200
Shift foreman, openhearth	2800	to 3700
Blast furnace keeper	1750	to 2500
Shop superintendent	3300	to 4700
Plant superintendent	4600–5000	to 7500
Laboratory technician		800–1200
Engineers		1000–2500
Office secretary	600–700	to 945
Research W/degree		3000–5000

NOTE: Earnings are 15 pct less in South and West. Official exchange: 4 rubles = $1.00; tourist rate: 10 rubles = $1.00.

What of Safety?—In the plant, he doesn't have the safety precautions —either in personal equipment or machinery guards—typical of any American plant. And plant sanitary facilities leave much to be desired. Transportation is on foot or in crowded buses or street cars.

Much of the menial labor in the mill is done by women, who make up 15 to 25 pct of the steel industry labor force. They lay bricks, sweep floors, ballast railroad tracks, mix mortar. But they also make excellent rolling mill operators; and you see them supervising the automatic controls of soaking pits and reheating furnaces. They are paid the same as men, get special benefits, like maternity leave with pay.

To understand a little of the social life of the Soviet steelworker you have to keep two facts in mind:

Technical training . . .

. . . for steelworkers is excellent. Lack of mechanical background of many Soviet workers is more than compensated for by intensive training at plant-operated technical schools. Training is on elaborate working models of furnaces, mills, electrical control boards, etc.

There Is No God—Except for the "old people" there is no religion as we know it—no worship of God as practiced by Christians or Jews, by Bhuddists or Mohammedans. There is a religion; a powerful and compelling one: Communism. Though only 7 million out of Russia's 200 million people are Party members, most of the others appear to adhere firmly to the doctrines of socialism as currently interpreted by the Party Councils.

There Is No Home Life—Not home life as we know it. Most women work; those with the best jobs have the best chance of beating the manpower shortage and getting married. Once married, childbearing interrupts work for perhaps three months, after which the child is brought to a nursery on Monday morning and picked up on Saturday afternoon. This goes on through kindergarten and schools (which are compulsory for 7 years, will soon be a 10 year requirement). It offers a perfect opportunity to indoctrinate youth in communism.

MEN: They seem contented, constantly beat their quotas. Expensive, elaborate equipment is used to train them for higher skills.

Parents take their state-sponsored vacations with other workers at state-operated resorts, the children go to state camps. What time there is at home is often taken up with education—for promotion in the steelworks is based on training and ability, not seniority.

A Communal Life—Social life therefore revolves about work and community activities. Each town has its "Palace of Culture," usually a magnificent building complete with an auditorium for theatricals, gymnasiums, a lecture hall, hobby-shops and other assembly rooms. The steel plant pays its original cost and maintenance, the union operates it for worker amusement and self-improvement.

In addition, there may be a "House of Technique," where elaborate working models train workers in night school classes for higher skills. These centers also run correspondence courses.

Housing Is Scarce—In plant communities housing is the responsibility of the plant superintendents. And they are driving hard to build new apartments for their workers. Example: Ten years ago, Magnigogorsk began building a new city which now houses 60 pct of the plant's 28,000 workers in its total population of 150,000. It is being expanded to a city of 400,000.

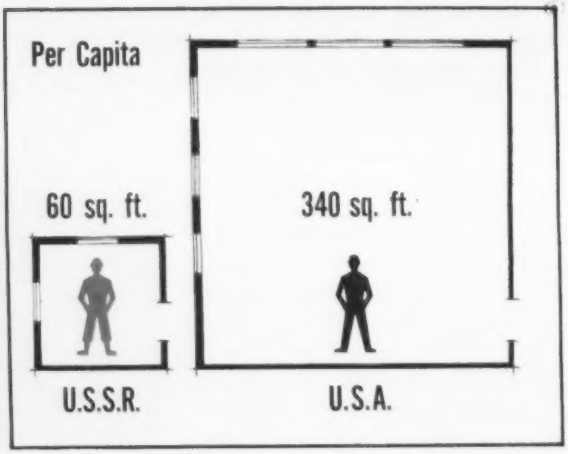
There are no new single-family homes there because materials use is more efficient in apartments. There are duplex houses for about 15 pct of the Magnigogorsk workers. And like most Soviet cities, there are thousands of small plots at the edge of town for weekend gardeners.

Education Is Pushed—In every industrial center there are numerous training schools which are the main

Waste of labor . . .

. . . is one reason the USSR has an acute labor shortage. War is one cause. But inefficient use of the existing labor force is obvious. Examples; (1) Three men in cab of switching engine at Novosibirsk, Siberia; ten more standing around watching; (2) antiquated packaging: i.e. use of wooden boxes nailed by hand, board by board in lieu of paperboard, skids, etc., in shipping tinplate; (3) bus drivers sit in an isolated compartment, so each bus requires a ticket taker too.

TYPICAL HOUSING for steelworkers are these apartments in steelmaking city of Stalinsk, in Siberia.



LIVING SPACE of Russian worker, left, is about a fifth that of the United States per capita average.

source of new recruits for industry.

And the worker is encouraged to continue his training after he starts to work. At Chelyabinsk, we were told that 7,000 of the plant's 15,000 employees either had taken or are now taking special courses on their own time. In fact, promotion to the next job usually requires a 3-month course on the worker's own time. Supervisors act as instructors in a school built by the plant management—which also is responsible for the entire plant area's schools, housing, etc. Some 500 foremen there are now taking a 3-year night course.

In the little mining town of Kamish Barun (pop. 12,800) the Kerch Ore Combine requires every new worker to take a company-operated six-month course, 4 hours a week, after work. This is regardless of previous education.

Living standards . . .

. . . in USSR, low by Western values, are admittedly better than they were 10 or 20 years ago. General feeling of the Russians is that the state is doing its best to improve things. Obvious for all to see is the nationwide drive to build new housing for the people.

What of His Bosses?—Top management (Plant Director and Chief Engineer) are appointed by the Council of Ministers in Moscow. They are nominated by their District Economic Council, which also must approve the Director's nominations of his assistants. These assistants, like all supervisors down to and including section heads, must also be approved by the union.

We were told that management is selected on the basis of knowledge of the field and ability to work with people. Top jobs go apparently only to men who are in the party or with it. The present Director at the Chelyabinsk steel plant was Secretary of the Chelyabinsk Communist Party a few years ago.

The Party Rules—It seems hardly necessary to add that whether it be in Moscow or Minsk, in management, labor or anywhere else—the Communist Party is the power behind everything that goes on. (Commanding officers of military units have as co-equals morale officers who see that the Party's policies are carried out.)

The Russians are becoming conscious of the need for more effective management training. They are expanding courses in special branches of management at district and local levels. Whether these are short refreshers, 3-month or 2-year courses, the "students" receive their regular pay while they attend.

What of Competition?—All up and down the social and economic scale—and straight across too—competition is keen. This is a keystone of socialist activity today.

Competition is encouraged in many ways:

Among Workers themselves the desire of each to exceed quotas is motivated by the prospects of seeing his (or her) picture on bulletin boards and in newspapers. And there's more money too.

Between groups within a plant there are contests to see who can exceed quotas by the largest amounts.

Promotion is based on ability, not on seniority.

Plant Managements compete with each other, and entire plants compete on production goals, cost reduction or similar forms of progress. Worker delegations will travel to another plant to challenge them to such competitions, and large hullabaloos are raised over the results.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

It used to take 40 man hours– *now 8 man hours do the job*

Prior to delivery of RB-66 type jets and some military turbojet transports, Douglas makes a thorough check to see that no tools or loose items have been left that might cause structural damage. This means inspection of control surfaces and other areas difficult to "get at"—a job that took 40 man-hours even for the relatively small RB-66's.

Now, using Kodak Industrial X-ray Film, Type AA, and a Douglas-designed mobile x-ray unit, the work is cut to 8 man-hours.

This faster film permits areas of as much as 10 sq. ft. to be inspected with one exposure—with the x-ray tube as much as 15 ft. from the surface—and with "quartered" exposure time.

Easy to see how Kodak Industrial X-ray Film, Type AA, can save time and speed up routine examinations. It also extends the service of present radiographic equipment and produces quality results.

Have your Kodak x-ray dealer or Kodak Technical Representative show you what this film can do to lower costs, speed your operations.

EASTMAN KODAK COMPANY, *X-ray Division*, Rochester 4, N. Y.

Read what the new Kodak Industrial X-ray Film, Type AA, does for you:

- Reduces exposure time—speeds up routine examinations.
- Provides increased radiographic sensitivity through higher densities with established exposure and processing technics.
- Gives greater subject contrast, more detail and easier readability when established exposure times are used with reduced kilovoltage.
- Shortens processing cycle with existing exposure technics.
- Reduces the possibility of pressure desensitization under the usual shop conditions of use.

Kodak
TRADE MARK

J&L STEEL

JALZINC ZINC COATED SHEET

This J&L cold rolled steel has been annealed and the surface prepared for coating on this modern Sendzimir mill. Here it is emerging from a flux-free molten zinc bath, where wetting and bonding occur instantaneously. Zinc is bonded to the base metal in a tight, high lustre coating that will not flake or chip.

"JalZinc gives us maximum corrosion resistance. And there's no flaking in our tough crimping operation."

. . . reports builder of unique steel structures

"JalZinc sheets meet our requirement for strong, corrosion-resistant zinc coated sheet that will hold its finish through tough transverse crimping operations," states Mr. Peter S. Pedersen, Jr., president of Wonder Building Corporation of America, Chicago.

JalZinc is produced by J&L, a major integrated steel producer, under the most rigid quality control. J&L's modern continuous galvanizing process coats the steel with a bright, uniform spangle that improves end product appearance.

Sheet metal users across the country are finding that JalZinc is a superior quality steel that can be bent, stamped, rolled, crimped beyond belief without damage to the coating.

Ask your distributor about JalZinc for your next job, or write Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Penna.

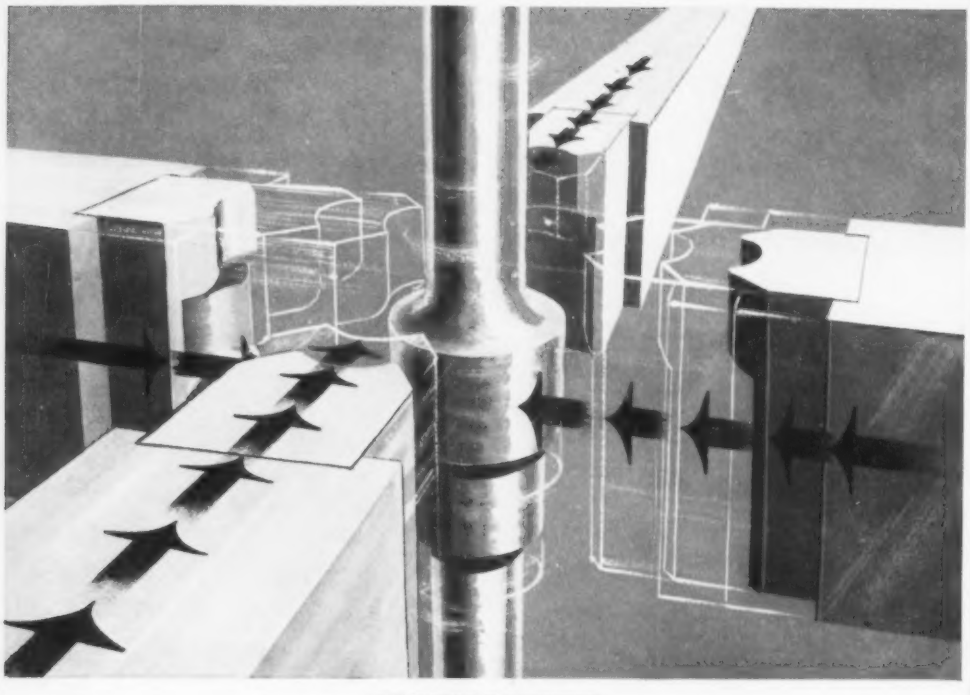
These pre-engineered trussless steel structures are fabricated at the Wonder Building plant, Chicago, from 18 gauge JalZinc sheets.

Superior quality JalZinc is readily available in a wide range of gauges and widths in both cut lengths and coils.

J&L STEEL

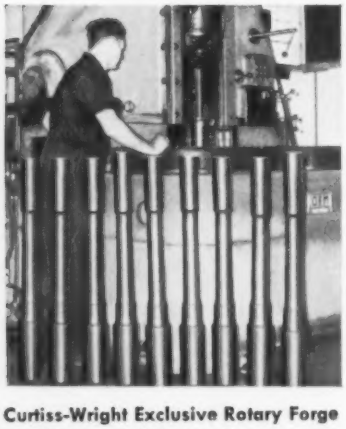
Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA



ANOTHER CURMET PROCESS

New Precision ROTARY FORGE saves up to 30% on Finished Parts



Curtiss-Wright Exclusive Rotary Forge produces precision parts . . . saves industrial buyers from 15% to 30%.

Producing complex solid or hollow parts from *less metal* and with *greater accuracy*, the Curtiss-Wright Rotary Forge provides industry with a new, economical source for precision forgings.

Parts are hot-forged in this CURMET process to tolerances of .015 inches outside and .005 inches inside or to still higher tolerances when cold forged. Expensive finishing time is cut down, chip loss is minimized and added strength and toughness assured . . . with overall savings on the forged part of up to 30%.

The Rotary Forge, only one of its type in the United States, shapes parts by synchronized blows of four hammers, each striking up to 600 times a minute. Tapered steel truck axles, for example, are produced to accurate dimension in 25 seconds. Because dies are comparatively inexpensive, orders in moderate volume can be filled at lowered costs.

High pressure gas cylinders, jet nozzles, venturis and other precision components for transportation, oil, electric motor and other industries can be forged to your order by this new CURMET process.

FOR FULL INFORMATION, WRITE TO:

METALS PROCESSING DIVISION
760 Northland Avenue

CURTISS-WRIGHT CORPORATION
Buffalo 15, New York

New Production Line Speeds Painting

On paper, new installations seem the ultimate. Putting them into actual use can be a different story. Minor kinks may plague setup.

Perseverance is the key. Once new equipment really gets going, most firms find it pays off beyond expectations.

▪ Practically every new production line runs into minor troubles at first. Sometimes, it almost seems like such setups aren't the "ultimate" they once appeared. But once minor kinks work out, management generally finds new equipment pays off better than initially thought.

Such was the case at Dana Corp.'s Parish Div., Reading, Pa. In starting up a new automobile frame painting system, engineers ran into some vexing situations.

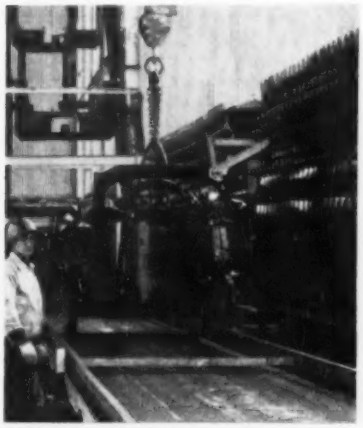
Run Into Problems — "Many problems were encountered before the system attained proper working efficiency," explains general manager H. B. Bartlett, "all of which required true ingenuity to overcome." In the final analysis, the new setup has greatly upped the firm's painting operations.

The new addition includes two assembly lines. One produces frames for Buick automobiles; the other, Mercury cars. Both end, of course, at an inspection station. From the lines, both type frames feed directly into a new paint machine.

Take Two Paths — Buick units go straight from inspection onto a normal chain conveyor. Mercury frames go from inspection via a drag conveyor to a unique slat conveyor. At the right moment the slat conveyor raises frames above the chain conveyor and puts them on it.

Combined capacity of conveyors is 200 frames an hour.

Each frame moves to an electric eye device which positions them for transfer to a monorail conveyor.



After drying, frames move via cranes and conveyors to rail cars.

This conveys them in vertical position through all subsequent painting cycles.

Washes Them — Frames move

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through a washing and rinsing cycle (with water held at 180°F). Then they go to a flow coating section. Here, they're automatically painted. Later a 350°F, 120 ft long drying oven bakes the finish.

Finally, the constantly moving line carries them to a pre-determined point adjacent to two railroad spurs. Inspectors make a final check here. Then they are loaded directly into specially-equipped gondola cars by heavy overhead cranes.

It takes two hours for a frame to move automatically through all cycles of painting and final car loading.

Fabrication

Nickel alloy, carbon steel teams cuts vessel costs

Combining a corrosive resistant nickel alloy with carbon steel lets an oil refiner cut pressure vessel costs in half.

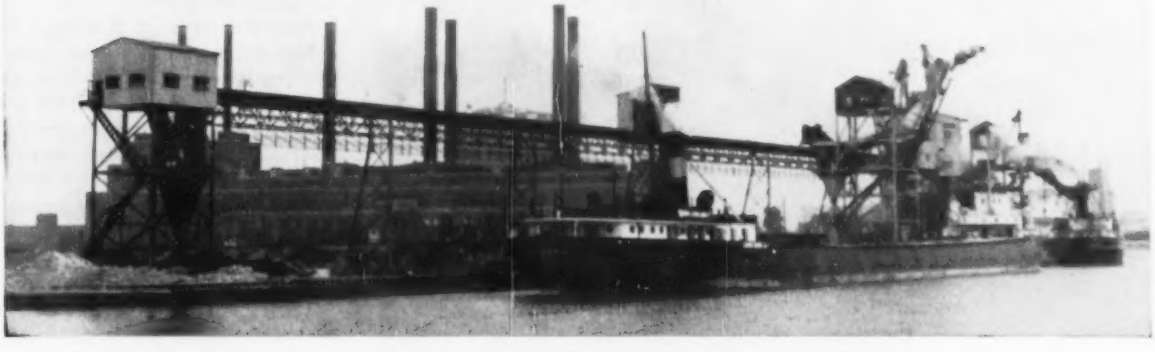
The vessel's builder, Manning & Lewis Engineering Co., Newark, N. J., prefers Hastelloy B for the job. This alloy effiectively fights attack by hydrochloric acid, heat and pressure involved in the refining operation.

However, this Union Carbide Corp. nickel alloy is relatively expensive. Understandably, the refiner wants fabrication costs at a minimum. Use of carbon steel would be cheaper and easier to work with. But it would not resist the highly corrosive elements.

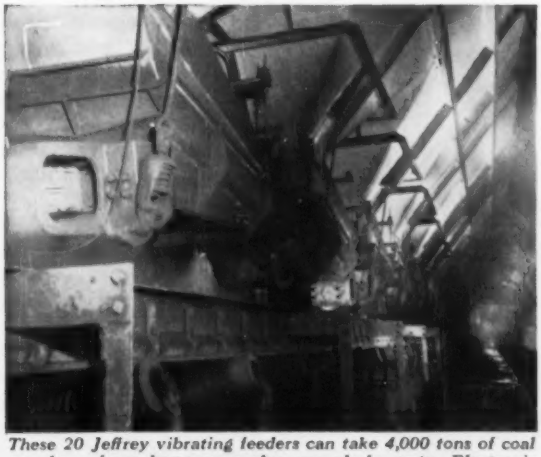
Uses Both Materials — Putting one and one together, the fabricator teamed both materials. Result: an estimated 50 pct cost saving over solid alloy construction. Using applied liners, seam sealing and overlay strips on a carbon steel base, it came up with a vessel satisfactory to the refiner both from cost and operational viewpoints.

Another approach to the problem might have been use of integrally clad metal.

Coal moves fast from railroad cars to ships at this transfer dock.



Rapid handling improves competitive position of 29 participating coal companies



These 20 Jeffrey vibrating feeders can take 4,000 tons of coal per hour from hoppers under car shake-outs. Electronic controls vary the feed to assure a uniform rate of flow to the 72-inch conveyor belt that carries the coal to boat loading telescopic chutes.

COAL is transferred quickly, economically, from railroad cars to ships here at Rail-to-Water Corporation's Chicago docks. This permits the 29 Midwestern coal companies who are partners in this enterprise to sell their coal on the Great Lakes.

Typical equipment contributing to the speed which spells economy is this line of 20 Jeffrey electric vibrating feeders. They keep coal on the move with a minimum of attention, saving manpower. Vibrations are timed to their natural mechanical frequency, insuring minimum use of power and quiet, trouble-free operation. No wearing of parts, so maintenance costs and downtime are low.

Catalog 870 describes Jeffrey vibrating feeders. The Jeffrey Manufacturing Company, 925 North Fourth Street, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT . . . TRANSMISSION MACHINERY . . . CONTRACT MANUFACTURING

Burroughs' Unique Tests and Johnson Wire Build Quality, Long Life in Business Machines

Detroit Plant Develops Own Devices For 100% Tests of Music Wire Springs

Burroughs Corporation demands music spring wire as thin as a spider web's strand but with a minimum tensile strength of 439,000 pounds per square inch.

Then—to make sure it gets what it orders—the Detroit business machine manufacturer does 100 percent testing of all wire coming into its plants. Burroughs goes further than standard test equipment would permit and has developed its own special testing devices.

Burroughs' insistence on enforcing specifications is the kind of quality challenge on which Johnson Steel & Wire Company thrives. A customer's emphasis on quality wire complements Johnson's own skill and care given to producing the best in specialty fine wires.

Precision springs, made from Johnson Steel & Wire Company's music spring wire, get 100 percent testing on unique testing machines like this. Designed and built by Burroughs, this machine verifies a spring's load-carrying capacity at various extensions. If any modification is needed, correction can be made while spring is still on test device.

Johnson Steel & Wire has become Burroughs' major music spring wire supplier because Johnson's wire passes 100 percent inspection with flying colors.

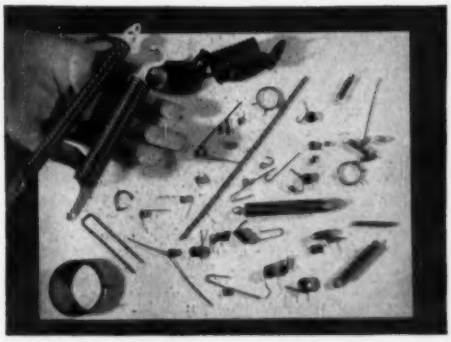
At Burroughs, where a monthly production of 3½ million precision springs of music wire is not unusual, close attention must be given to everything affecting performance of the finished spring. Failure of even the simplest spring could disable an adding machine, cash register, calculator or any of the dozens of different business machines Burroughs makes.

For its new machines, as well as service parts for older models, Burroughs makes 1,300 different kinds of springs. Music wire required for them ranges from .005-inches in diameter (with minimum tensile strength of 426,000 psi) to the largest diameter used—.106 inches in diameter, (with a minimum tensile of 268,000 psi).

Here's what Burroughs wants from music spring wire, in addition to tensile strength:

The coating, in the case of tin-coated music spring wire, must be uniform and adherent to eliminate peeling, cracking or flaking during coiling.

- **High physical qualities,** uniform cast and smooth, lustrous surfaces are another must so that uniform springs, within dimensions and capable of carrying assigned loads, can be produced.
- **Accuracy of dimensions** greatly affects spring coiling and spring performance. Burroughs' tolerance specifications are met consistently by Johnson's wire.
- **Straightness requirements** for pre-straightened wire call for a three-foot length of wire cut from a



Here's some of the approximately 1,300 different kinds of springs which Burroughs Corporation manufactures from Johnson Steel's music spring wire.

Several hundred music wire springs have been installed in this portable Burroughs adding machine. Every spring is critical, says Burroughs, because even the smallest spring failure could disable the machine.

coil to be straight within 4 inches for .013-inch diameter wire and straight within 3 inches for wire .014-inch diameter and larger.

• **Coilability** is assured in the music spring wire Burroughs buys. Burroughs specifies that wire (.105 inch in diameter and smaller) must meet this test:

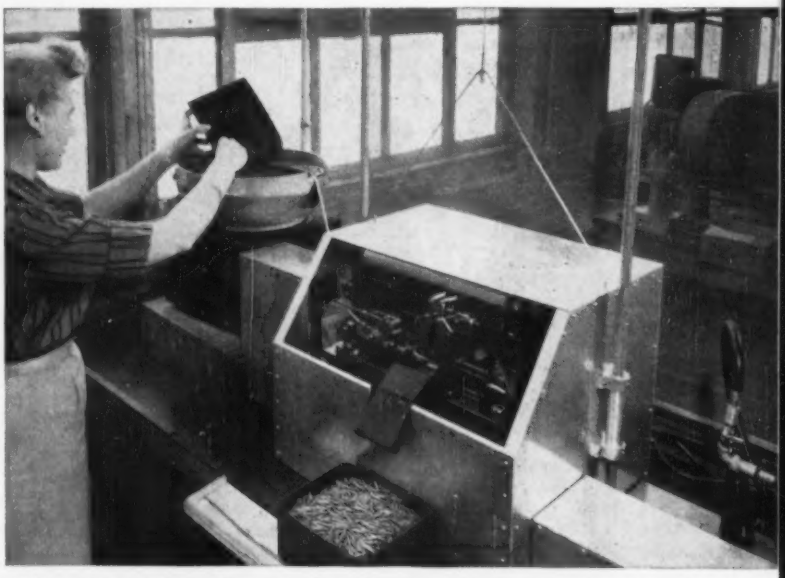
Wire is wound in a tightly closed spring to a coil length of 5 inches on an arbor 3 to 3½ times the diameter of the wire. When this spring is stretched so that it sets to 3 times its original length, the coils must show a uniform pitch with no splits or fractures in the wire.

Testing completes the cycle which calls for highly skilled technicians coiling the best music spring wire available on the most modern equipment.

Testing machines, designed and built by Burroughs and used in addition to the standard machines, include the test fixture pictured here. This machine tests load-carrying capacity of springs. If any corrections are needed, they can be made while the spring is still on the test device.

Burroughs' careful attention to specs, its quality control and its testing procedure—plus its confidence in Johnson's music spring wire—are proof that Johnson can meet the toughest music wire demands.

Putting Johnson's music spring wire on your production lines starts benefiting you immediately. A corps of skilled wire engineers is as close as your telephone. Get in touch today with any of the district sales offices listed at right.



This automatic spring eye-forming machine was designed and built by Burroughs personnel. An operator is shown filling the hopper with coiled springs which will be given an eye at each end on this device.

Johnson Steel & Wire Company, Inc.

Worcester 1, Massachusetts

a subsidiary of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

Fills Gap Between Shot, Powder

Where aluminum shot isn't practical, or powder too costly, a new granular product may fill the bill.

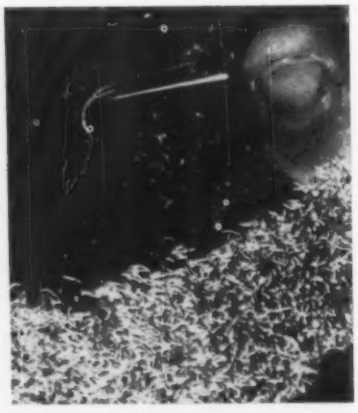
It offers both flexibility and economy.

▪ Bridging the gap between aluminum shot and aluminum powder is a new metal product. Coarse and granular, the aluminum is made by a recently developed process.

Reynolds Metals Co., Richmond, Va., is now producing the material in two standard sizes designated 300-X and 200-X granules. However, it can turn out a wide range of others between shot and powder.

Reynolds says its new process offers a flexibility in alloys not previously available in finely-divided aluminum particles.

Give More Surface—Long and irregularly shaped, these particles provide a much greater surface area per unit of weight than does aluminum shot, and at much less cost than aluminum powder.



The aluminum granules are long and irregularly shaped.

In the initial sizes, larger granules range in diameter from 0.132 to 0.02 in. Smaller particles are 0.08 to 0.01 in.

Forming

All plastic drop hammer dies have been in use at a major aircraft company for many months. Dies measure from 1 to several ft long.

According to Furane Plastics, Inc., supplier of the Epocast-11D and Hardener-9813 from which they are fabricated, their use has been very successful. Over-all die weight is about one-fourth that of ones made of other materials.

Foundry

For casting, a new aluminum alloy (X357) is now obtainable from Kaiser Aluminum & Chemical Sales, Inc. It combines high tensile and yield strengths with good ductility after heat treatment. Castability, machinability, dimensional stability and resistance to corrosion are other features.

Brazing

For high-temperature service, a new alloy brazes wide gaps. Even large clearances of 0.050 in. can be

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brazed. Wall Colmonoy Corp., which spent six years developing the material, recommends it for use in non-rotating lightly loaded parts and structural assemblies with cross-sectional thicknesses of 1/16-in. or greater.

Welding

Specially processed to weld AISI 1025 to 1045 steels is a new copper coated welding wire. Page Steel & Wire Div., American Chain & Cable Co., makes it.

When used with Co_2 welding or with a neutral flux submerged arc on 0.35 carbon steel joints, the weld wire imparts tensile strength to 81,000 psi, yield strength to 61,000 psi, elongation of 24 pct.

Hardfacing

Machinable deposits which are tough, strong, and heat and corrosion resistant can be applied via a new electrode. For hard-surfacing steels and nickel-base alloys, it can be used on forging dies, overlaying rams, piercing tools, tongs, hooks, ladles and other implements for handling hot metals. Eutectic Welding Alloys Corp., is its maker.

Nonferrous

Titanium sheet now on the market withstands 100 tons per sq in. pressure and up. Titanium Metals Corp. of America says the material is made possible by a new heat-treating method. To heat-treat the titanium sheet, the firm uses a unique furnace which heats metal to 1600°F through a quick, powerful jolt of electricity. A sudden quench with hundreds of gallons of water follows.

Tubing

Polyvinyl chloride tubing has been developed which is uniformly crystal clear. Highly resistant to discoloration under normal conditions, this tubing is so clear that minute impurities and small air bubbles can be easily seen in the tubing.

Now available from Munray Products Div., Fanner Mfg. Co., Cleveland, it comes in all standard tubing sizes from .120 to 1½ I.D., in wall thicknesses of .025, 1/16, 3/32, ⅛, 5/32, and 3/16.

Melting

Tungsten pellets now available for vacuum melting are "gas free." Of high purity, hydrogen reduced tungsten powder formed into spherical shape, the pellets vary from ⅛ to ¾-in. diam. This shape rapidly dissolves. Gas contents, says their maker, Strategic Metals Corp., are less than 100 parts per million. Density averages 12 grams per cc. Some 0.50 to 0.75 pct iron acts as a binding agent for tungsten additions to iron free alloys. Nickel or cobalt can substitute as a binding agent, though.

The Iron Age Summary

Auto Lag Mars Order Picture

Except for hesitation on the part of automakers, the steel order picture looks better than at any time since the decline started.

When automotive orders do come in, hand-to-mouth buying will be a thing of the past.

▪ The post-Labor Day uptrend in the steel industry is already well under way.

Improved order books are solid affairs; there is no water, no duplication, and slim chances for cancellation. Assurances of a stronger steel market have not appeared with such clarity since the downtrend started last year.

Automotive Problems—But auto firms, consciously or unconsciously, are putting their steel suppliers on the spot. Their orders are not up to either expectation or potential need. Furthermore, auto business is being placed on a piecemeal basis, with no relation to the sensitivity of the steel deliveries.

If there is an auto strike (and chances are still better than 50-50 there will be) steel firms will be further involved in the troubles of the auto companies.

First will be the gap in steel orders. Then the auto companies will expect them to make up for their shutdowns with major tonnages of steel on a moment's notice.

Competitive Squeeze — Furthermore, the auto companies are aware they have every steel supplier watching each other to see that none walks off with more than its "fair share" of available steel orders.

Automakers will use this competitive vantage point to insist that, if they are shut down, they must count on fast and substantial delivery at the end of the auto labor negotiations.

Some See the Light—There is an additional complication in that many other consumers will want their steel promptly later this year. However, in recent weeks many consumers have started a stronger trend to bigger orders, more of them, and longer deliveries.

These factors point to a probable tightening of the market over night —not to the point of steel scarcity, but certainly to a point where most hand-to-mouth buyers must run for cover.

A pickup in steel orders from automakers, when it comes, will tighten the delivery of material other than flat-rolled. This is because automotive sheet and strip will get a bigger bite of available steel ingots. That, in turn, will force steel mills to build their own stocks ahead of their finishing units.

Orders Top Shipments—In the past five to six weeks, fresh order volume has been running ahead of shipments. This trend has accelerated in the past week. There has been far less building of steel stocks at the mill than some reports indicate.

New orders placed last month ran from 20 to 25 pct ahead of July for many firms. With others, the increases were not so sharp, but there was fair-sized improvement.

Steel Output, Operating Rates

Production	This Week	Week Ago	Month Ago	Year Ago
Net tons, 000 omitted)	1,728	1,728	1,569	2,074
Ingot Index				
(1947-1949=100)	106.5	106.5	98.0	129.1
Operating Rates				
Chicago	77.5	75.0	68.0	82.0
Pittsburgh	55.0	55.0*	52.0	80.0
Philadelphia	74.0	74.0	66.0	92.0
Valley	48.5	49.0*	49.5	74.0
West	80.0	78.5*	70.0	100.0
Cleveland	51.0	53.0	53.0	81.0
Buffalo	49.0	46.0	51.0	100.0
Detroit	71.0	67.0	65.0	91.0
South	52.0	53.5	54.5	85.0
South Ohio River	74.0	77.0	41.0	86.0
Upper Ohio River	82.0	82.5*	75.0	92.0
St. Louis	82.0	82.0	83.0	73.0
Aggregate	64.0	64.0	59.0	81.0

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)	This Week	Last Week	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.188	6.188	6.138	5.967
Pig Iron (gross ton)	$66.49	$66.49	$66.49	$66.42
Scrap, No. 1 hvy (Gross Ton)	$42.83	$42.50	$42.17	$50.17
No. 2 bundles	$29.17	$29.50	$29.83	$40.34
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	26.50	26.50	26.50	28.50
Lead, St. Louis	10.80	10.80	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin Straits, N. Y.	96.00	94.875*	95.875	93.00
Zinc, E. St. Louis	10.00	10.00	10.00	10.00

Discounts Rule in Valve Market

Manufacturers, battling for sales, may try to hold off price increases until after end of the year.

Right now they're building stocks to offer fast delivery and putting more emphasis on product development.

▪ Increases in materials costs are having little effect on valve prices. Competition among valve producers is tough. Discounting has become almost a way of life in the industry.

Few, if any, valve makers are in a position to raise prices under these conditions. As the sales manager for one medium-size producer of general-use valves says:

"The few cents difference that increased steel costs means in our product cost is a drop in the bucket the way discounts are handed out today." He complains that "we can't get the prices we should."

Price Holdoff Likely—The sales manager for one of the nation's major valve producers says he does not anticipate higher prices during the remainder of 1958. But he would not commit himself beyond the end of this year.

His silence could be interpreted to mean: If the fourth quarter upturn comes off as predicted by many economists, the competitive picture might change by January 1 —and valve makers would be in a position to raise prices without fear of losing sales.

"It wouldn't take too much to really knock the roof off the market," explains another sales manager. "Our profit margin isn't as high as last year, but we're still busy."

Stock Building — "Busy" for many valve makers means busy building up finished goods inventories. To beat competition to the punch with fast deliveries, producers are stocking up on their standard valve lines. Service is an all-important sales lever today.

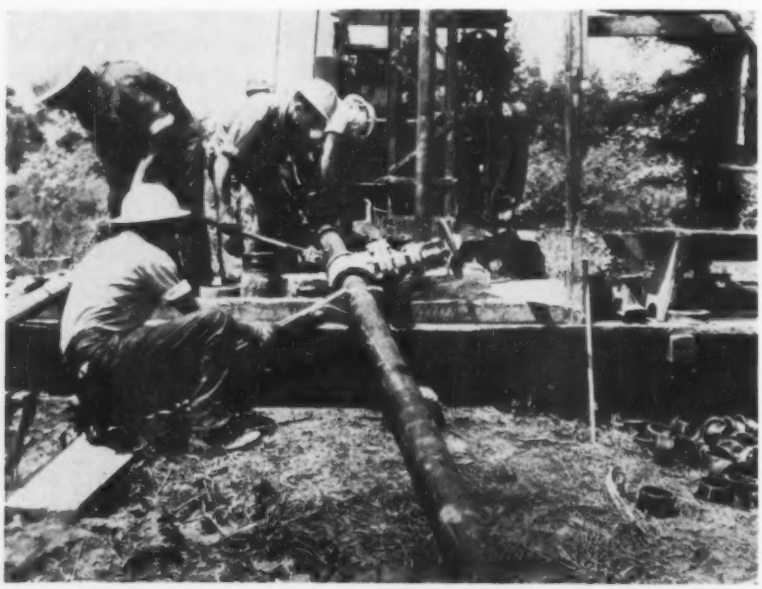
Adding to the woes of the valve industry is the failure of government orders to come through in the volume expected. One producer reports that his government work has decreased considerably.

What's New—Most valve makers are placing more emphasis on product development, and a flood of new and improved designs is on the market. One of the most interesting recent developments is an all-stainless steel shock absorber for arresting water hammer in all types of hydraulic systems.

The shock absorber, made by J. A. Zurn Mfg. Co., Erie, Pa., protects valves and fittings from damage wherever flow velocity is subject to sudden change. It is especially effective in protecting quick-closing, solenoid-actuated valves and pumping systems.

It is small, lightweight, easy to install, and features a new bellows design with a permanent sealed-in air charge. The air charge eliminates need for maintenance and danger of contamination in the system in case of unusual damage.

In recent tests, Zurn claims its Shoktrol unit withstood over 300,000 continuous cycles with no sign of strain or wear whatsoever. The unit requires no support and needs only one fitting for installation.



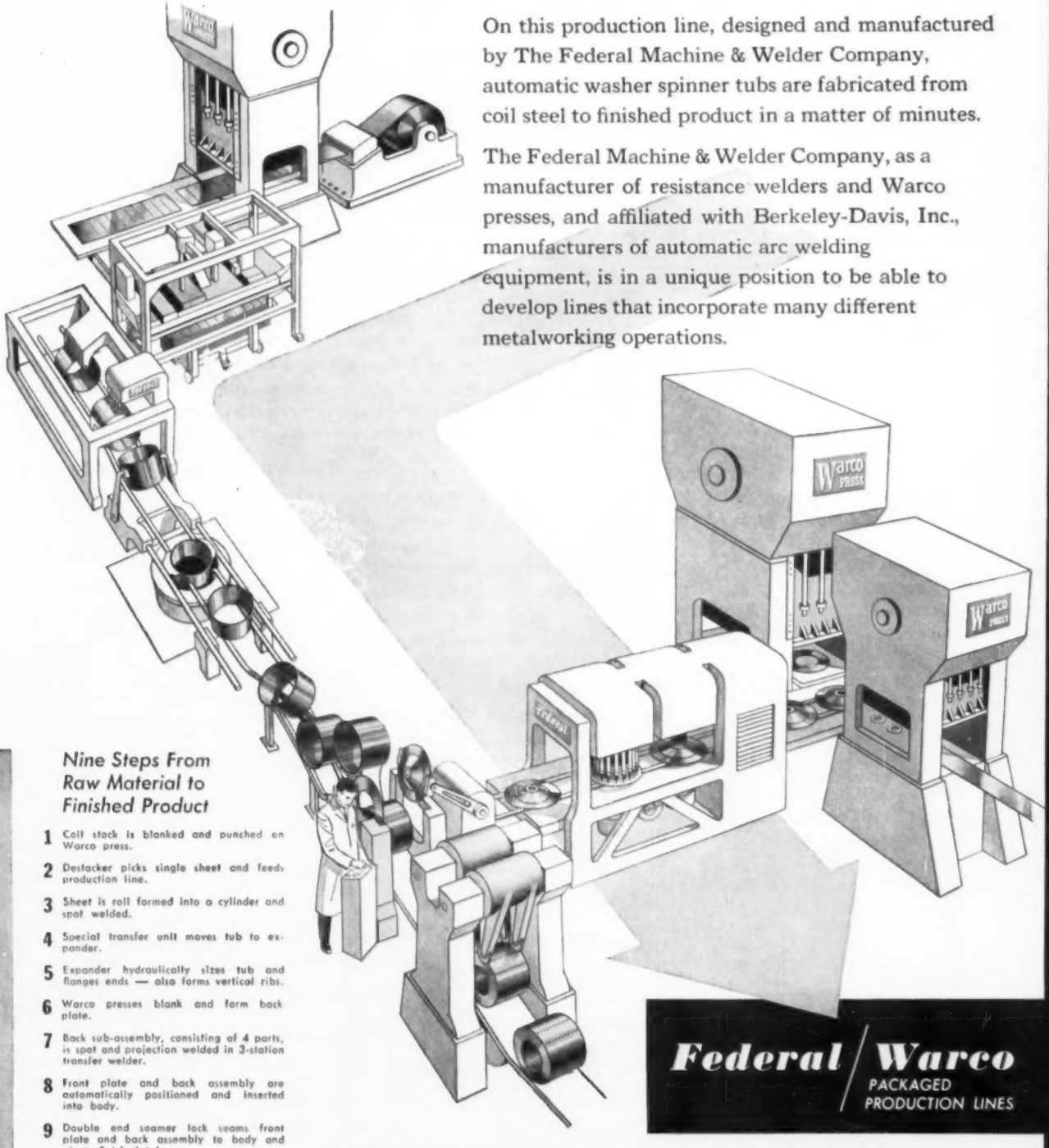
BIG VALVE CUSTOMER: Hundreds of valves and many thousand feet of wrought iron tubing and casing are being used by the natural gas industry to equip wells. Here, workmen install a four-inch control valve at a United Natural Gas Co. well near Polk, Pa. (A. M. Byers Co. photo)

THE ACCENT IS ON PRODUCTION

in a production line by FEDERAL

On this production line, designed and manufactured by The Federal Machine & Welder Company, automatic washer spinner tubs are fabricated from coil steel to finished product in a matter of minutes.

The Federal Machine & Welder Company, as a manufacturer of resistance welders and Warco presses, and affiliated with Berkeley-Davis, Inc., manufacturers of automatic arc welding equipment, is in a unique position to be able to develop lines that incorporate many different metalworking operations.



Nine Steps From Raw Material to Finished Product

1. Coil stock is blanked and punched on Warco press.
2. Destacker picks single sheet and feeds production line.
3. Sheet is roll formed into a cylinder and spot welded.
4. Special transfer unit moves tub to expander.
5. Expander hydraulically sizes tub and flanges ends — also forms vertical ribs.
6. Warco presses blank and form back plate.
7. Back sub-assembly, consisting of 4 parts, is spot and projection welded in 3-station transfer welder.
8. Front plate and back assembly are automatically positioned and inserted into body.
9. Double end seamer lock seams front plate and back assembly to body and ejects finished tub.

* Sequence of operations controlled by static relay system designed and built by Federal.

Federal / Warco
PACKAGED PRODUCTION LINES

THE FEDERAL MACHINE AND WELDER COMPANY, WARREN, OHIO
Affiliated with Berkeley-Davis, Inc., Danville, Illinois

Good Selling Ahead In Structurals

Construction activity — moving at high levels—will pace structural steel market in the months ahead.

More than 1.2 million tons of structurals were scheduled for fabrication between August and November.

▪ Sales prospects for fabricated structural steel are good in either the short or long-range view.

Fabricators had their best month for bookings in over a year this July. They took in orders for over 330,000 tons of steel, topping the monthly average since July, 1957 of 214,000 tons by more than 100,000 tons, according to the American Institute of Steel Construction.

When compared with other steel product shipments, structural shipments are at good levels. While they dipped in July, they are running only 9 pct below 1957 levels on a seven months comparison.

Structural sales are clearly reflecting the rapid pace of construction activity. May, June, and July of this year were the best months in history for construction, F. W. Dodge Corp. reports. Construction contracts for July alone, Dodge says, totalled more than $3.6 billion.

Most encouraging for the future, however, is the backlog of fabricator tonnages. As of the end of July, the AISC reports, they represented more than 2.2 million tons of steel. And more than half of this — over 1.2 million tons — is scheduled for fabrication between now and the end of November.

Rail Price Increase—Bethlehem Steel Co., effective Sept. 2, raised the price of No. 1 standard rails by $4.50 a ton. New price is 5.75¢ per lb. Other rail producers—U. S. Steel and Colorado Fuel & Iron—are expected to take similar action. Bethlehem also raised joint bars to 7.25¢ per lb and tie plates to 6.875¢ per lb.

Sheet and Strip—The recent upturn in buying continues. Users are increasing both the size and the frequency of their orders. In some cases mills are getting advance bookings for October, November, and December. As a result, some producers have rolling space left in the last two weeks of this month while October space is closing fast. Cold-rolled sheet can't generally be obtained in the **Chicago** area until November. However, September bookings are good for many mills. An **Eastern** producer of sheet and strip says bookings for this month are running 20 to 25 pct above August levels.

Other flat-rolled products are even more active than hot-rolled and cold rolled. Galvanized sheet is quoted for November delivery in the **Midwest.** Bonderized sheets for construction use are out to January in that area. Aluminized sheet at a **Chicago** mill is sold out through the first three months of 1959.

Bar—Shipments of hot-rolled bar from mills were at a good level last month. August will be one of the best months, if not the best for producers so far this year. Distributors also report hot-rolled bar sales increased last month. Cold-finished bar producers are increasing operation with most now on 5-day weeks. Rod and reinforcing bars continue moving well. Forging manufacturers are buying more actively.

Pipe and Tubing—Buttweld pipe is picking up slowly, but steadily. Plastic coated pipe has also improved. Oil country goods are still quiet for domestic mills, with imports hurting sales. Many linepipe producers now have enough tonnage on the books to guarantee mill operations until the end of the year and, in some cases, well into the first quarter of '59. Demand is greatest for pipe in the larger 24-in. and 30-in. sizes.

Wire Products—A sales upturn for most wire items is underway. Bookings on merchant wire products for a large **Midwest** mill are double the June rate and at the best level so far this year. Manufacturers wire in the **Chicago** area is showing an August spurt with prospect that deliveries may lengthen. Barbed wire mills are stepping up operations. Paving mesh is sold out into October. Building mesh is moving at a somewhat slower pace with late September deliveries still possible.

Pig Iron—End of the foundry vacation season has given pig iron orders a substantial lift. Most founders in the **East Coast** region are again working four- or five-day weeks. However, while pig iron sales are fairly steady there are no signs of advance buying. Deliveries are still from stock on standard grades.

Republic Steel Corp. has dropped the price of low phos. pig iron out of Troy, N. Y., by $1 a ton to a new price of $73 a ton.

PURCHASING AGENT'S CHECKLIST

Appliance industry plans comeback with a new set of marketing rules. **P. 39**

Stainless steel producers concentrate on sales as capacity outstrips shipments. **P. 44**

New Red export list due soon from Commerce Dept. **P. 61**

COMPARISON OF PRICES

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Sept. 2 1958	Aug. 26 1958	Aug. 5 1958	Sept. 3 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.32	5.32	5.12	5.12
Plates, wrought iron	13.55	13.55	13.15	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.275	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.45	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.525
Light rails	6.50	6.50	6.50	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.188¢	6.188¢	6.138¢	5.967¢

	Sept. 2 1958	Aug. 26 1958	Aug. 5 1958	Sept. 3 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$70.51
Foundry, Valley	66.50	66.50	66.50	66.50
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.66
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.47	70.47	70.47	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.49	$66.49	$66.49	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$44.50	$44.50	$44.50	$52.50
No. 1 steel, Phila. area	39.50	38.50	37.50	50.50
No. 1 steel, Chicago	44.50	44.50	44.50	47.50
No. 1 bundles, Detroit	37.50	37.50	37.50	46.50
Low phos., Youngstown	46.50	46.50	46.50	55.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	59.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	56.50
No. 1 mach'y cast, Chicago	53.50	53.50	52.50	60.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$42.83	$42.50	$42.17	$50.17
No. 2 bundles	29.17	29.50	29.83	40.34
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$15.38	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$17.50-$19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	26.50	26.50	28.50
Copper, Lake, Conn.	26.50	26.50	26.50	28.50
Tin, Straits, N. Y.	96.00¢	94.875*	95.875	93.00
Zinc, East St. Louis	10.00	10.00	10.00	10.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Industrial Scrap Prices Falter

The scrap trade suffered a slight setback when early auto lists brought less than expected.

The market continues strong, however, although some of the water was squeezed out.

▪ Some of the strength slipped out of the market as industrial lists went for less than had been confidently expected.

It left some of the trade speculating that the recent price upsurge had lifted the market a notch above the level justified by the steel operating rate.

The result was not exactly a weaker market, but a more realistic one. Demand still appears to be strong and dealer morale high. Dealers do not indicate they can be stampeded into weakening prices on primary grades and continue to hold inventories for better prices.

In most consuming areas, major orders are expected in September, although some of the estimates of much higher prices were tempered by the lower-than-expected industrial list yields.

There is some evidence, however, that uncertainty over the auto labor situation, which has had an effect on steel, is slipping into the scrap market.

The only significant price change is a $1 increase in steelmaking grades in Philadelphia, where the market is a bit stronger.

Pittsburgh—Hopes for an active September market were somewhat dimmed when auto lists dropped to $47 on cars, about $2 under a month ago. Tonnage involved is small, but the drop was not widely expected. Secondary grades are selling $1 lower in fringe areas. Weakness is still expected to be only temporary, but will squeeze some water out of the market. Slightly lower prices should bring in some new orders, especially if the auto labor situation clears up.

Chicago — Both dealers and brokers are sitting tight waiting for the first post-Labor Day mill offers, and with little inclination to rush into new orders. As one broker put it, "I can't sell any scrap, but I can't buy any either." Factory bundles lists went at $48.50 to $49.50 (on track price) on a number of scattered sales. Price to the consumer continues to run at $52. General market outlook is very strong with the expectation of mill buying in quantity during the week.

Philadelphia — Limited tonnages of No. 1 and No. 2 heavy melting were bought by a local mill at $1 above last week's prices. Another sale of 5-ft low phos also went for $1 higher price. Strength is still in the market, but there's some doubt now about a real boom this month. In the last week of August—usually an indicator of September business —there was conspicuous absence of large tonnage orders.

New York—The market is quiet in a Labor Day lull. Exports continue, as do small domestic orders. Great hope is for substantial buying by local mills early in September. Prices are unchanged.

Detroit — Industrial lists eased slightly last week. Tonnages were about the same as last month. However, dealers aren't sure how this will affect their prices and are waiting to see if mills will buy dealer scrap. There are no price changes.

Cleveland — Industrial bundles went for about $44 on cars or about $1 under a month ago, but underlying strength continues. Tonnage is under normal due to model changeovers and may end up less than the expected 12,000 tons because of wildcat auto strikes. Mills are enforcing specs on blast furnace grades and others.

St. Louis — The market has a slightly weaker tone as mills reduced prices $1 on openhearth grades. The action was due to a flood of scrap brought out by recent price increases and the mills' feeling that they can get scrap at a lower level. A leading consumer also cut prices of turnings and heavy breakable cast.

Birmingham — Last-of-month purchases of scrap were smaller than usual, with major consumers holding off. Some small purchases were made at unchanged prices, however. Most dealers are still confident of higher prices and expect mills back in the market in September.

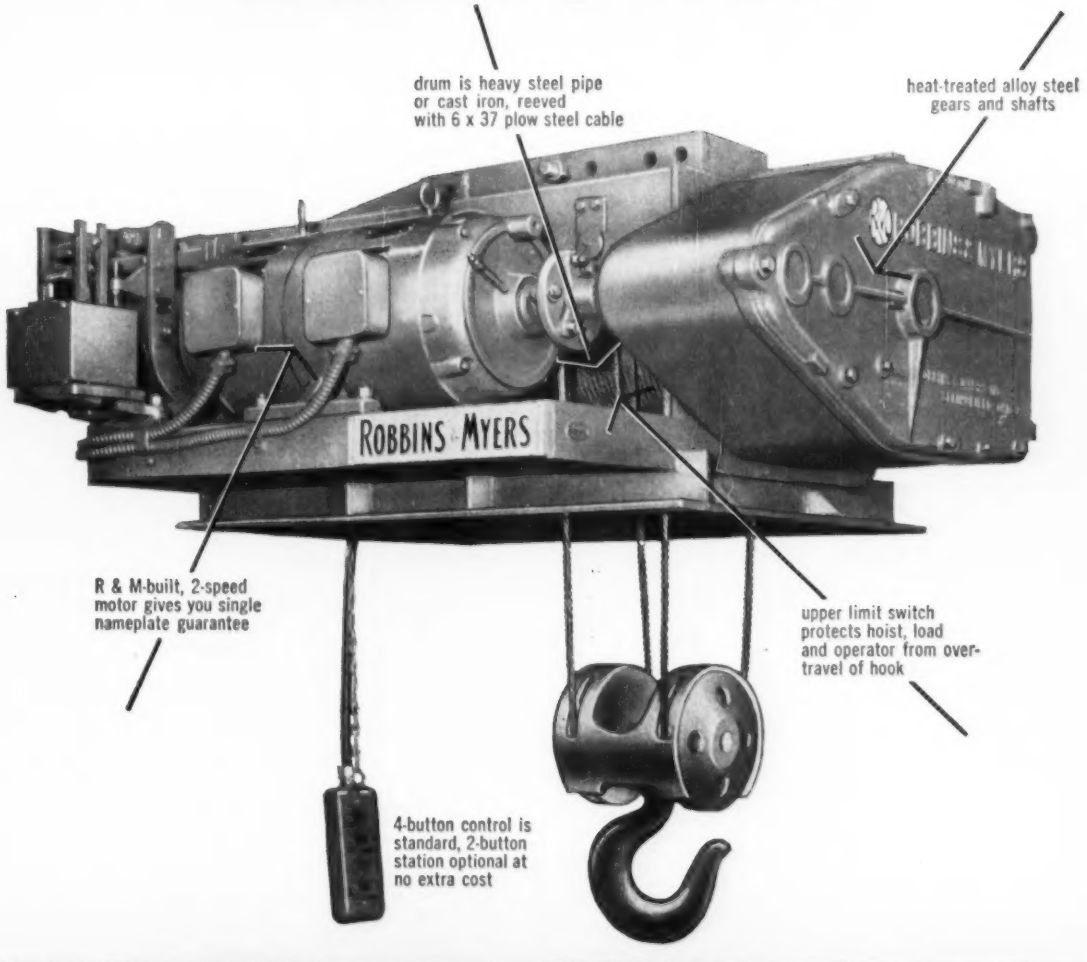
Cincinnati—The market slipped slightly when prices for the month on secondary grades dropped $1. But prime grades are unchanged and mills are taking in material. If orders are quickly filled, the market may slip again slightly, but underlying strength is there.

Buffalo—Prices of No. 2 bundles and No. 2 heavy melting both dropped off $1 as purchases were made at below previous levels.

Boston — Some cast grades are up as demand increased mildly. Otherwise, the market is quiet and prices unchanged.

West Coast—Prices remain the same as the market continues stagnant. Mills are taking minimum tonnages. Dealers are awaiting export orders which should come in soon to firm the market.

dual-duty hoist



R&M Dual-Duty two speed hoists keep any load under complete control. They furnish the perfect, steady speed combination you need for gentle, accurate spotting of dies, cores, patterns and other delicate loads; and they give you the fast-action lifting you want for high speed production. Their simple, dependable squirrel cage motor eliminates the uncertain speed-load characteristics and maintenance problems of the slip-ring motors used on most conventional multi-speed hoists. With R & M you can select from industry's widest job-proved line: 5 frame sizes, 25 speed-load combinations.

Capacities: ½ to 10 tons. Controls: 2 or 4 pushbutton. Mounting: lug or hook; plain, geared or motorized trolleys. *Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.*

take it up with

ROBBINS & MYERS

hoists **cranes**

Request Bulletin 880

SCRAP PRICES *(Effective Sept. 2, 1958)*

Pittsburgh

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and ms. turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch'gs plate	49.00 to 50.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR steel wheels	52.00 to 53.00
RR spring steel	52.00 to 53.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast	51.00 to 52.00
Cupola cast	43.00 to 44.00
Heavy breakable cast	41.00 to 42.00
Stainless	
18-8 bundles and solids	200.00 to 210.00
18-8 turnings	120.00
430 bundles and solids	110.00 to 115.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	51.00 to 52.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	23.00 to 24.00
Low phos. forge crops	53.00 to 54.00
Low phos. punch'gs plate	49.00 to 50.00
Low phos. 3 ft and under	47.00 to 48.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	54.00 to 55.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	59.00 to 60.00
Locomotive tires cut	54.00 to 55.00
Cut bolsters & side frames	51.00 to 52.00
Angles and splice bars	56.00 to 57.00
RR steel car axles	70.00 to 71.00
RR couplers and knuckles	53.00 to 54.00
No. 1 machinery cast	53.00 to 54.00
Cupola cast	47.00 to 48.00
Heavy breakable cast	41.00 to 42.00
Cast iron brake shoes	43.00 to 44.00
Cast iron wheels	40.00 to 41.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	205.00 to 210.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	110.00 to 115.00
430 turnings	70.00 to 75.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	20.00 to 21.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	42.00 to 43.00
Low phos. 2 ft and under	43.00 to 44.00
Low phos. punch'gs	43.00 to 44.00
Elec. furnace bundles	40.00 to 41.00
Heavy turnings	34.00 to 35.00
RR steel wheels	44.50 to 45.50
RR spring steel	44.50 to 45.50
Rails 18 in. and under	57.00 to 58.00
Cupola cast	39.00 to 40.00
Heavy breakable cast	41.00 to 42.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
Unstripped motor blocks	30.00 to 31.00
No. 1 machinery cast	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$38.50 to $39.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. 18 in. and under	43.00 to 44.00
Rails, random length	44.00 to 45.00
Rails, 18 in. and under	54.00 to 55.00
No. 1 cupola cast	42.00 to 43.00
Hvy. breakable cast	34.00 to 35.00
Drop broken cast	46.00 to 47.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$41.50 to $42.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	41.50 to 42.50
No. 1 factory bundles	46.00 to 47.00
No. 2 bundles	28.50 to 29.50
No. 1 busheling	41.50 to 42.50
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forge flashings	41.50 to 42.50
Low phos. punch'gs plate	42.50 to 43.50
Foundry steel, 2 ft & under	41.00 to 42.00
No. 1 RR hvy. melting	47.00 to 48.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Railroad grate bars	18.00 to 19.00
Steel axle turnings	25.00 to 26.00
Railroad cast	49.00 to 50.00
No. 1 machinery cast	48.00 to 49.00
Stove plate	44.00 to 45.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	195.00 to 200.00
18-8 turnings	105.00 to 110.00
430 bundles	105.00 to 110.00
430 turnings	40.00 to 45.00

Buffalo

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
RR steel wheels	44.00 to 45.00
RR spring steel	44.00 to 45.00
RR couplers and knuckles	44.00 to 45.00
No. 1 machinery cast	45.00 to 46.00
No. 1 cupola cast	41.00 to 42.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Cast iron borings	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	46.00 to 47.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
Std. steel car axles	64.00 to 65.00
RR specialties	47.00 to 48.00
Cupola cast	48.00 to 49.00
Heavy breakable cast	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	46.00 to 47.00
Structural and plate, 2 ft	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles & splice bars	47.00 to 48.00
Rerolling rails	59.00 to 60.00
No. 1 cupola cast	53.00 to 54.00
Stove plate	53.00 to 54.00
Charging box cast	22.00 to 23.00
Cast iron car wheels	39.00 to 40.00
Unstripped motor blocks	42.00 to 43.00

Youngstown

No. 1 hvy melting	$45.00 to $46.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Cast iron borings	24.50 to 25.50
Low phos. plate	46.00 to 47.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	17.00 to 18.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	11.00 to 12.00
Clear cast. chem. borings	24.00 to 25.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	35.00 to 36.00
Charging box cast	34.00 to 35.00
Heavy breakable cast	34.00 to 35.00
Unstripped motor blocks	24.00 to 25.00
Stainless	
18-8 prepared solids	175.00 to 180.00
18-8 turnings	75.00 to 80.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	25.50 to 26.50
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	36.00 to 37.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Low phos. punch'gs plate	36.00 to 37.00
No. 1 cupola cast	39.00 to 40.00
Heavy breakable cast	30.00 to 31.00
Mixed cupola cast	39.00 to 40.00
Automotive cast	43.00 to 44.00
Stainless	
18-8 bundles and solids	185.00 to 190.00
18-8 turnings	90.00 to 95.00
430 bundles and solids	95.00 to 100.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	24.00 to 25.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	24.00 to 25.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and short turn.	8.00 to 9.00
Shoveling turnings	9.00 to 10.00
Clean cast. chem. borings	19.00 to 20.00
No. 1 machinery cast	32.00 to 33.00
Mixed cupola cast	30.00 to 31.00
Heavy breakable cast	29.00 to 30.00
Stove plate	30.00 to 32.00
Unstripped motor blocks	21.00 to 23.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn 1 ft and under (foundry)	43.00
No. 1 RR hvy. melting	33.00
No. 1 cupola cast	39.00 to 41.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast	36.00
Mixed yard cast	36.00

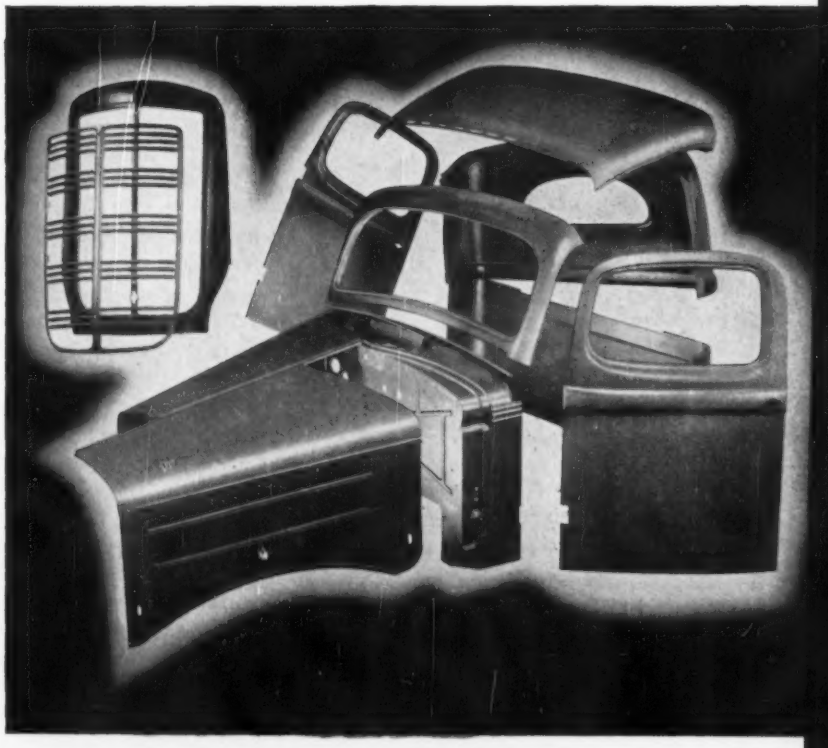
Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00

Morrison Steel Products
draws and stamps countless specialty items from Youngstown Cold-Rolled Sheets in their spacious Buffalo, N. Y. plant.

Accent on Excellence

Youngstown cold-rolled sheets



In 1912, Morrison Steel Products, Inc., of Buffalo, were fabricating automobile fenders for custom-built Pierce-Arrow motor cars. Today they have grown into a major contract producer of quality stampings and drawn steel specialties—ranging from overhead garage doors to defense items such as jet engine nose rings.

Perhaps your lawnmower, car door, heating furnace or other products that make life a bit easier, are assembled from Morrison stampings —which begin with the best in basic material, Youngstown Cold-Rolled Sheets.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

MORRISON STEEL PRODUCTS, INC.
BUFFALO 7, N. Y.

QUALITY YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

Try for Voluntary Lead-Zinc Curb

Administration will ask exporters of lead and zinc to U. S. to cut shipments when markets get too soft.

They will offer to hold the tariff line in return. Trade gives the plan little chance.

▪ The Administration is still looking for a way to help domestic lead and zinc producers without hiking tariffs or imposing quotas.

The latest project: To get foreign exporters of lead and zinc to the U. S. to voluntarily limit their shipments during times of stress and soft markets.

The trade says the chances are 50-50 at best, with most not even that optimistic.

Trade Meeting—The issue will be warmed up in London on September 8 to 11, at the meeting of the United Nations Interim Coordinating Committee for International Commodity Agreement. Delegates from most Free World importing and exporting countries will seek to solve their international trade problems without imposing barriers on one another.

The U. S. will be represented by delegates from State, Interior and Commerce Depts. Several members of the domestic lead-zinc industry were invited in observer-advisory capacities. But they declined, and at the beginning of this week it was unclear if there would even be an unofficial representative of U. S. industry at the session.

The big stick of U. S. negotiators will be that unless there can be a curtailment agreement, tariffs will have to be raised.

Problems — Industry observers say it is questionable whether foreign delegations will come armed to make such binding agreements. Further, they say, many foreign sellers would disturb their profit picture less with a slightly higher tariff than a limit on shipments.

Lead-Zinc Sales — Meanwhile, the domestic lead and zinc markets appear to be going in almost opposite directions. One seller calls the improvement in zinc buying "excellent", expects September to be even better. But lead markets he considers "kind of sick."

The reason appears to be imports. This seller calculates that imports of lead are running about 45 pct ahead of last year, while imports of zinc are about 43 pct behind 1957.

Aluminum

Things appear to be looking up for the aluminum industry. Within the last week two major producers each announced they were putting one of their idle potlines back into production.

Reynolds Metals Co. is putting back a line at the Jones Mills, Ark., plant. This will put operations there at 80 pct of capacity with four of five lines working.

On a company wide basis, production is now 83½ pct of the rated capacity of 601,000 tons. It has been moving up steadily from a low of 73 pct in July.

Kaiser Aluminum & Chemical Co. is putting a line back at its Mead, Wash., plant. It will now have six of eight lines there working. Kaiser attributes the boost in output to an "improvement in aluminum sales."

Tin

The price of tin at New York moved up almost a full cent early this week after a highly unusual situation of no price changes for six straight trading days.

The reason: The British Board of Trade announced that imports of tin from Russia would be limited to 750 tons per quarter. This means that no more than that tonnage can be traded on the London Metals Exchange. It seriously hampers Russia's ability to disturb this market. Traders say there is a good chance similar restrictions will be enacted by other Free World markets.

Tin prices for the week: Aug. 27—94.875; Aug. 28—94.875; Aug. 29—95.75; Sept. 1—holiday; Sept. 2—96.00.*

* Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in August based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	26.50
Copper, Lake	26.50
Straits Tin, New York	94.988
Zinc, E. St. Louis	10.00
Lead, St. Louis	10.645
Aluminum ingot	26.80

Note: Quotations are going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	26.50	25-26.50	7/17/58
Copper (CS)	26.00	26.50	8/28/58
Copper (L)	26.50	25.00	7/17/58
Lead, St. L.	10.55	10.00	8/13/58
Lead, N. Y.	10.75	10.75	8/13/58
Magnesium ingot	38.00	34.00	8/13/58
Magnesium pig	38.25	33.75	8/13/58
Nickel	74.00	64.00	12/6/56
Titanium sponge	185-205	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 128.

Saves Time... Cuts Costs

Rotary Planer • • • do milling jobs in one-third to one-seventh of time on an Espen-Lucas Rotary Planer.

Big Sawing • • • production cutting of large stock —rapid, easy, straight-to-a-line piece after piece—on Espen-Lucas Cold Sawing Machines.

The **ESPEN-LUCAS** *Machine Works*

Front Street and Girard Ave., Phila. 23, Pa.

BUILDERS OF LARGE COLD SAWING MACHINES • ROTARY PLANERS • COLUMN FACERS • HEAVY TYPES OF SPECIAL MACHINERY

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136–.249	.250–3
1100, 3003	45.7	43.8	42.8	42.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6063 T-6
6–8	42.7–44.2	51.1–54.8
12–14	42.7–44.2	52.0–56.8
24–26	43.2–44.7	62.8–67.8
36–38	46.7–49.2	86.9–90.5

Screw Machine Stock—2011-T-3

Size*	¼	⅜–½	⅝–1	1¼–1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250–2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	89.3
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.3

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.63	.....	46.86	49.82
Brass, 70/30	43.57	44.11	43.51	46.48
Brass, Low	46.03	46.57	45.97	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83	.....	42.14	51.24
Munts Metal	45.95	.....	41.76	.....
Comm. Bs.	48.30	48.84	48.24	50.98
Mang. Bs.	51.57	.....	45.67	.....
Phos. Bs. 5%	58.59	.....	60.09	.....

Free Cutting Brass Rod 29.28

TITANIUM

(Base prices f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.55
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb).... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ... $70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb. .. 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $240 to $244
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 59.50
Palladium, dollars per troy oz... $17 to $19
Platinum, dollars per troy oz... $59 to $65
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 88.625
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 27.00
- No. 120 ..... 26.25
- No. 123 ..... 25.75

80-10-10 ingot
- No. 305 ..... 31.25
- No. 315 ..... 29.25

88-10-2 ingot
- No. 210 ..... 38.25
- No. 215 ..... 34.00
- No. 245 ..... 30.75

Yellow ingot
- No. 405 ..... 22.75

Manganese bronze
- No. 421 ..... 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.50-25.00
- 0.60 copper max. 24.25-24.75

Piston alloys (No. 122 type).. 24.25-25.25
No. 12 alum. (No. 2 grade)... 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)... 24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22⅛	21⅝
Yellow brass	17	15⅝
Red brass	19⅝	19
Comm. bronze	20⅝	19⅞
Mang. bronze	15⅝	14⅞
Yellow brass rod ends	16⅝	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	21⅝
No. 2 copper wire	20⅛
Light copper	18
*Refinery brass	19⅝
Copper bearing material	18

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	21⅝
No. 2 copper wire	20⅛
Light copper	18
No. 1 composition	19⅛
No. 1 comp. turnings	18⅝
Hvy. yellow brass solids	14
Brass pipe	15
Radiators	15⅛

Aluminum

Mixed old cast.	12 —12⅛
Mixed new clips	15 —16
Mixed turnings, dry	13 —14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	19¼—19⅝
No. 2 copper wire	17¼—17⅝
Light copper	15¼—15⅝
Auto radiators (unsweated).	11½—12
No. 1 composition	15½—16
No. 1 composition turnings..	14½—15
Cocks and faucets	12⅝—13
Clean heavy yellow brass	10⅝—11¼
Brass pipe	12⅝—13¼
New soft brass clippings	13¼—13⅝
No. 1 brass rod turnings	10⅝—11¼

Aluminum

Alum. pistons and struts	5¼— 5⅝
Aluminum crankcases	9¼— 9⅝
1100 (2S) aluminum clippings	12⅝—13⅛
Old sheet and utensils	8¼— 9⅛
Borings and turnings	6¼— 6⅝
Industrial castings	9¼— 9⅝
2024 (24S) clippings	10⅝—11¼

Zinc

New zinc clippings	4 — 4⅛
Old zinc	3 — 3⅛
Zinc routings	1⅝— 2
Old die cast scrap	1⅛— 1⅝

Nickel and Monel

Pure nickel clippings	42-45
Clean nickel turnings	37-40
Nickel anodes	42-45
Nickel rod ends	42-45
New Monel clippings	28-29
Clean Monel turnings	20-23
Old sheet Monel	25-26
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	16

Lead

Soft scrap lead	6½— 6¾
Battery plates (dry)	2 — 2⅛
Batteries, acid free	1½— 1⅝

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixer common babbitt	9½—10
Solder joints	13¼—13⅝
Siphon tops	42
Small foundry type	10½—10⅝
Monotype	10¼—10½
Lino. and stereotype	9¼— 9½
Electrotype	8¼— 8½
Hand picked type shells	6¼— 6⅝
Lino. and stereo. dross	2¼— 2½
Electro dross	1⅝— 2

(Effective Aug. 29, 1958)

STEEL

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy *Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B3*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				15.90 *T8*
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*					
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		15.50 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P18*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8 M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, D1,D2,P11*	7.575 *G3*	10.80 *D2*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *S1, R3*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W3,F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*			7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K2*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.85 *K1*	9.275 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.325 *J3* 9.475 *C1*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2* R3, C16	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Aug. 29, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras applv.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Coke* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*,	10.025 *B3*	6.50 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*								
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3 J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, N3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *N3, S1*	7.225 *N3, S1**, *R3*	7.525 *R3, S1*	9.275 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3*	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.05 *W5, J3*	$8.75 *U1, J3*	7.50 *U1 J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.85 *K1*	7.525 *K1*				8.275 *K1*	10.575 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$10.80 *C7*	$9.50 *C7*	
SOUTH	Atlanta, Ga												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.65 *S2*			

*Electrogalvanized sheets

(Effective Aug. 29, 1958)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, N. J. Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*		
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.85 *R3,R1*	6.725 *R3,* 6.475 *T5*	9.025 *R3,R2,* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8*	7.85 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.85 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5,675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3 Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,S1*	9.025 *C10*	7.925 *S1*	5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1, J3*	6.375 *U1*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5 J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		8.625 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2, R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Aug. 25, 1958) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Aug. 29, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2

High-carbon chromium.. .955 D-3, D-5
Oil hardened manganese .505 O-2
Special carbon ..... .38 W-1
Extra carbon ..... .38 W-1
Regular carbon ..... .325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (89) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.525	6.50	6.975	.....	.....	.....	15.35
Cleveland *R3*	.....	.....	.....	10	10	.....	.....
So. Chicago *R3*	.....	.....	.....	10	10	.....	.....
Ensley *T2*	5.525	6.50	.....	.....	.....	.....	.....
Fairfield *T2*	.....	6.50	.....	10	10	6.60	.....
Gary *U1*	5.525	.....	.....	.....	.....	6.60	.....
Huntington *C6*	.....	6.50	.....	.....	.....	.....	.....
Ind. Harbor *I3*	5.525	.....	6.975	10	10	6.60	.....
Ind. Harbor *Y1*	.....	.....	.....	10	10	.....	.....
Johnstown *B3*	.....	6.50	.....	.....	.....	.....	.....
Joliet *U1*	.....	.....	6.975	.....	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10	10	.....	15.35
Lackawanna *B3*	5.525	6.50	6.975	.....	.....	6.60	.....
Lebanon *B1*	.....	.....	6.975	.....	15.10	.....	15.35
Minnequa *C6*	5.525	7.00	6.975	10	10	6.60	14.75
Pittsburgh *P5*	.....	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10	10	.....	.....
Seattle *B2*	.....	.....	.....	.....	.....	6.75	15.75
Steelton *B3*	5.525	.....	6.975	.....	.....	6.60	.....
Struthers *Y1*	.....	.....	.....	10	10	.....	.....
Torrance *C7*	.....	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10	10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50
Foundry, beehive (f.o.b.)	$18.00 to $18.50
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field		9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective Aug. 29, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775**
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4****	173	190	172	212	196	8.65	9.325
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dav. *M4***	175	192	...	214	198	8.75	9.425
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.00	9.675
Johnstown *B3***	173	190	172	...	196**	8.65	9.325**
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9**	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.60	10.225
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6†*	178	192	177	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.20
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6†*	.....	.....	.....	236	.....	9.95	10.50†
Sparrows Pt. *B3***	175	.....	.....	214	198	8.75	9.425
Sterling, Ill. *N4****	175	192	172	214	198	8.75	9.425
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.30
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.56
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C7*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over ..... 10.5¢
West of Miss. River ..... 9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River ..... 10.5¢
West of Miss. River ..... 9.5¢
Canadian sponge iron, del'd in East, carloads ..... 10.5¢
Atomized iron powder, 98% + Fe, 40 mesh,, F.O.B. Easton, Pa., in 100 lb bags ..... 7.7¢
Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb bags—RZ-365—Freight allowed east of Miss. River 10.5¢
Atomized iron powder, 98% + Fe. Cutting and scarfing grade, F.O.B. Easton, Pa. ..... 8.5¢
Electrolytic iron, annealed, imported 99.5+% Fe .... 29.5¢
200 mesh ..... 33.0¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe 57.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe.. 88.0¢ to $2.85
Aluminum, freight allowed.. 38.00¢
Brass, 10 ton lots ..... 31.1¢ to 47.1¢
Copper, electrolytic ..... 41.50¢
Copper, reduced ..... 40.3¢ to 48.8¢
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd ... $5.00
Lead, f.o.b. Hammond, Ind. . 19¢
Manganese f.o.b. Extron, Pa. 46.0¢
Molybdenum, 99% ..... $3.60 to $3.95
Nickel ..... $1.05 to $1.13
Solder powder ..... 13¢ plus met. value
Stainless steel, 302 ..... $1.02
Stainless steel, 316 ..... $1.30
Tin ..... 14.00¢ plus metal value
Tungsten, 99% (65 mesh) $3.15 (nominal)
Zinc, 5000 lb & over..... 17.5¢ to 20.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Full Container Price	30 Containers	30,000 Lb.	40,000 Lb.
	Pct. Discounts			
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy. — Full case or Keg price

⅜ in. or smaller 60½
7/16 in. to 1 in. inclusive 55½
1 1/16 in. to 1½ in. inclusive 58½
1 5/16 in. and larger 53½

C. P. Hex, reg. & hvy.

⅜ in. and smaller 60½
7/16 in. to 1½ in. inclusive 55½
1 5/16 in. and larger 53½

Hot Galv. Hex Nuts (All Types)

⅜ in. and smaller 46½

Semi-finished Hex Nuts

⅜ in. or smaller 60½
7/16 in. to 1½ in. inclusive 55½
1 5/16 in. and larger 53½
(Add 25 pct for broken case or keg quantities)

Finished

⅜ in. and smaller 63

Rivets

Base per 100 lb

½ in. and larger $12.25
Pct. Off List
7/16 in. and smaller 19

Cap Screws *Discount (Packages)*
Full Finished H. C. Heat Treat

New std. hex head, packaged		
¼" diam. and smaller x 6" and shorter	40	26
⅜", ⅜", and 1" diam. x 6" and shorter	22	3
⅛" diam. and smaller x longer than 6"	8	+13
¼", ⅜", and 1" diam. x longer than 6"	+ 6	+32
	C-1018 Steel Full-Finished	Cartons Bulk
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

		Discount Mach. Screws	Stove Bolts
Plain Finish			
Cartons		60	60
Bulk	*Quantity*		
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

		Discount Hex	Square
In Cartons		16	19
	Quantity		
In Bulk			
⅝" diam. & smaller	25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots 49.00
Electrodeposited 32.75
Brass, 80-20, ball anodes, 2000 lb or more 45.50
Zinc, ball anodes, 2000 lb lots 16.50
(for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carbon, 5000 lb 1.02 25
(Rolled depolarized add 3¢ per lb)
Cadmium 1.55
Tin, ball anodes $1.13 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 68.70
Copper sulphate, 100 lb bags, per cwt. 22.15
Nickel salts, single, 100 lb bags.... 36.00
Nickel chloride, freight allowed, 300 lb 42.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums 24.05
(Philadelphia price 24.50)
Zinc cyanide, 100 lb 60.75
Potassium cyanide, 100 lb drum N. Y. 48.00
Chromic acid, flake type, 10,000 lb or more 30.44

CAST IRON WATER PIPE INDEX

Birmingham 135.8
New York 138.7
Chicago 140.9
San Francisco-L. A. 148.6

Dec. 1955, value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
		Hot-Rolled (18 ga. & hvr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled		Standard Structural	Hot-Rolled (merchant)	Cold-Finished	Hot-Rolled 4615 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.81	10.68	.....	.....	.....	.....
Baltimore	$.10	8.10	9.00	9.78	8.00	8.76	8.60	8.75	12.43	16.28	15.28	19.83	19.08
Birmingham		8.18	9.45	10.46	8.23	8.56	8.64	8.60	10.56*	.....	.....	.....	.....
Boston	.10	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.28*	16.81	15.81	20.21	19.56
Buffalo	.15	8.40	9.15	11.22	8.90	9.35	9.40	9.30	11.15*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.00	10.25	8.66	9.04	9.15	9.14	9.30	16.28	15.28	19.70	18.95
Cincinnati	.15	8.49	9.65	10.60	8.98	9.42	9.71	9.46	9.46	16.52	15.52	20.02	19.27
Cleveland	.15	8.33	9.00	10.35	8.78	9.28	9.54	9.25	11.95*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit	.15	8.58	9.85	10.60	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60	.....	8.15	8.45	8.65	8.10	11.10	16.20	15.25	19.65	18.95
Kansas City	.20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		8.25	10.30	12.10	8.90	8.85	8.70	8.75	12.10*	17.05	16.10	21.05	20.35
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee	.15	8.48	9.73	10.38	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.31*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.10	9.00	11.27	8.70	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91
Pittsburgh	.15	8.60	9.95	11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	16.00	18.50	17.45	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20	.....	17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ¼" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.76" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective Aug. 29, 1958)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31–0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01–15.50), $101.00; Keokuk (14.01–14.50), $103.50; (15.51–16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50-52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2* Baltimore, *E1:* Middletown, O., *A7:* Massillon, O., *R3:* Gary, *U1:* Bridgeville, Pa., *U2:* New Castle, Ind., *I2:* Detroit, *M2:* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2,* Washington, Pa., *W2;* W. Leechburg, Pa., *A3,* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1:* Butler, Pa., *A7:* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1,* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A5;* Massillon, O., *R5,* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owenboro, Ky., *G5;* Bridgeport, Conn., *N8.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3:* Monessen, *P1:* Syracuse, *C11:* Bridgeville, *U2:* Detroit, *R5.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A3;* Pittsburgh, Chicago, *U1* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective Aug. 29, 1958)

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 27.50
0.025% C (Simplex) 36.75
0.10% C, 52-57% Cr, 2.00% max Si. 37.50
7-8½% max C, 50-55% Cr, 3-6% max Si 22.50
7-8½% max C, 50-55% Cr, 3% max Si 25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.31
0.50% max. C 1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads $1.29
Ton lots 1.31
Less ton lots 1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.)

Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton (Bulk)	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.20	22.90
98% Si, 0.75% Fe	24.95	23.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk 7.70
Ton lots, packed 10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.20	75% Si....	16.40
65% Si....	15.25	85% Si....	18.10
	90% Si....	19.50	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Aug. 29, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots $4.00
Less ton lots 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.33

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

Philadelphia Dealers Wait Out Market

Used machine sales in the area nosedived in August after an active July.

Now sellers are hoping for some firming of the market in the fall.

▪ Philadelphia area used machinery dealers are looking ahead to fall—not with optimism, but with hope. Coming out of an August when sales were as scarce as sunny days, the dealers believe business can't help but improve.

"We're trying to keep overhead down and wait out the market," says one. "Customers tell us they're planning to buy needed tools," another comments, "but most of them won't do it now."

"There's a little more light in the market," a third adds, "but we're sure not suffering from an oversupply of buyers."

Summer Falloff—Dealers in the Delaware Valley area are in general agreement on these points: (1) July was a good sales month, better than expected. (On a nationwide level it was only 8 pct below July, 1957, according to the Machinery Dealers National Association.) (2) Around Philadelphia the market was poor in August, even worse than seasonal factors usually make it. (3) Hopes are high for a better fall, but there's no evidence yet to back it up.

Success at Last—However, another dealer found some encouragement in an otherwise dull August. He closed two sales that had been hanging fire for months — waiting for management approval to spend the money. In one case the deal had been under study for six months.

"At least that's better than the case we had last winter," this dealer says. "Then we lost out on the sale of a $6000 press which plant production men badly wanted. The sale was vetoed by the front office at the plant with this comment, 'If the machine cost $1000 and production would stop without it, we'd buy, otherwise no.'" The dealer adds that kind of sales argument is rough to beat down.

Auction Attendance — At present, no major lines of equipment are moving in the Philadelphia market. Both toolroom and production equipment is slow. Electrical goods, which were fair, have also slowed down this summer.

The low level of sales is reflected in the atmosphere at auctions. During a recent one in nearby New Jersey, the dealers outnumbered user-buyers by ten to one. Prices bid on the equipment were low. One dealer bought a 1940 machine tool for $375. Estimated price of a 1958 model is $30,000.

Dealer Problems—Even at these attractive prices dealers are hesitant to buy for their own stocks. One was congratulating himself on reselling for $5000 a piece of equipment he bought about a year ago for $9500. Another says, "I bought a unit for $2000. It was a clear bargain, worth $6000-$6500 in a good market. The catch is this, how long will I have to hold it until someone wants it."

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Thomas #3 Horiz. Angle Bending Roll 4 x 4 x ⅜"
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13' x 5/16" Bertsch Initial Type
12' x ⅜" Hilles & Jones Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW
32' x ⅜" Baldwin Pyramid Type
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	56' Span	220/3/60
5 ton Shepard Niles	70' Span	230 Volt D.C.
7½ ton Shaw	40' Span	230 Volt D.C.
8 ton P&H	85' Span	220/3/60
10 ton P&H	39' Span	230 Volt D.C.
10 ton Milwaukee	57' Span	220 Volt D.C.
10 ton Shaw	48' Span	230 Volt D.C.
10/3 ton P&H	47' Span	220/3/60 A.C.
10 ton Shaw	120' Span	230 Volt D.C.
15 ton Northern	54' Span	230 Volt D.C.
15 ton Shepard Niles	56' Span	230 Volt D.C.
20/5 ton Whiting	47' Span	220/3/60 A.C.
120 ton Shepard Niles	77' Span	220/3/60

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60" Aetna Standard, 17 Rolls 4⅜" dia.
72" McKay, 15 Rolls 4¼" dia.
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500 ton Watson Stillman Piercing Press 48" x 72"
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1500 ton Mesta Steam Hydr. Forging Press
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315 ton Clearing, 24" Stroke, Bed 36" x 42"
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#168½ Toledo, 18" Stroke of Blankholder, 26" Stroke of Plunger, Bed 48" x 51"
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Buffalo #1½ Ironworker
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Cleveland Style RF, Arch Jaw, Capy. 1¼" x 1"
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#5 Stamco, Capy 16 Ga. Material 12" long 36" wide
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3¼" x 7" Six Roll Cluster Mill
8" x 10" Single Stand Two High
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10	Morgan	72' 3"
10	Calumet	72' 3"
10	Shaw	67' 11"
10	Whiting	67' 11"
10	Calumet	59' 4"
5	Shaw (4)	72' 3"
5	Shaw	59' 1"
5	Shaw (2)	67' 11"
3¾	Shaw	72' 3"
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CONTRACT MANUFACTURING

This section appears in the 1st and 3rd issue each month and carries announcements of plants offering specialized experience and facilities for the production of stampings, spinnings, weldments, wire forms, springs, screw machine products, forgings, castings, gears, dies, assemblies, special machinery, and services such as machine work, heat treating, plating, galvanizing, etc.

EQUIPMENT AND MATERIALS WANTED

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ADVERTISERS IN THIS ISSUE

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement.

CLASSIFIED SECTION

When this door comes down . . . so does your blast cleaning cost!

Abrasive-tight door on Rotoblast Barrel slashes "lost abrasive" costs

Look at it. That door on the Pangborn Rotoblast Barrel is engineered to prevent waste. Tough woven steel chain construction . . . laminated rubber back . . . edges that roll in mechanical labyrinths—it has to be abrasive-tight! As a result, here is another way that Pangborn Rotoblast Barrels save you money.

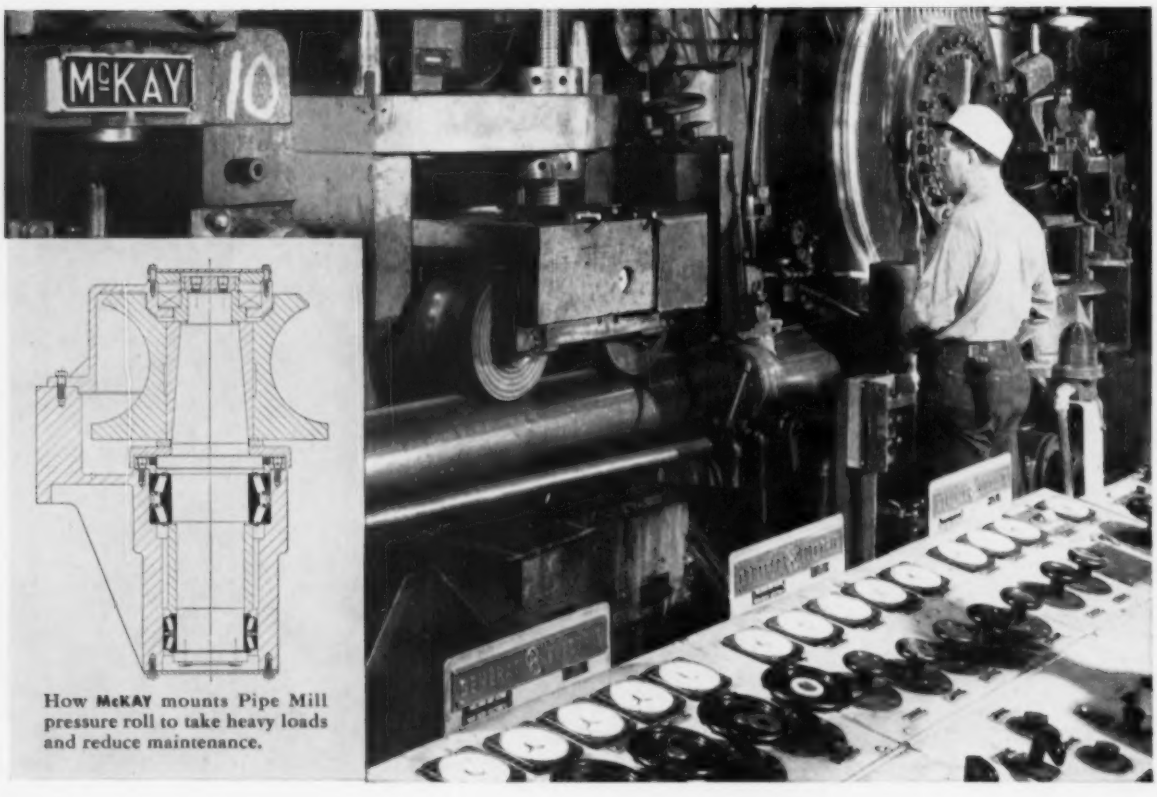
This door is just one of the many benefits built into Rotoblast Barrels. Efficient Rotoblast operation, for example. Automatic control. Ease of maintenance. Plus specific construction features that all add up to *better* cleaning in *less* time for *lowest* cost per ton.

The Pangborn Engineer in your area will be glad to take off his coat and go to work on your cleaning problem at no obligation. And for complete information on Rotoblast Barrels, write to: Pangborn Corp., *1500 Pangborn Blvd., Hagerstown, Md. Manufacturers of Blast Cleaning & Dust Control Equipment.*

Pangborn Rotoblast Barrel for efficient batch cleaning. Available in 1½, 3, 6, 12, 18, 20, 32, 72 and 102 cubic foot sizes.

Clean it fast with Pangborn ROTOBLAST®

Iron and Steel Exposition, Cleveland, Ohio, Sept. 23-26.



How **McKAY** mounts Pipe Mill pressure roll to take heavy loads and reduce maintenance.

TIMKEN® bearings take heavy loads on McKay 12¾" pipe mill at J & L

ROLLING out 120 feet-a-minute of 12¾" OD electriweld pipe, an advanced design McKay Pipe Mill is setting new production records at Jones & Laughlin, Aliquippa, Pennsylvania.

To get this, engineers mounted five Timken® tapered roller bearings on the pressure roll shafts and at other vital points. They take the heavy shock loads as pressure rolls upset the pipe edges during the welding operation. These same bearings must take the terrific sizing loads which are present when any cold pipe comes through the welding pass.

Timken bearings' rollers and races are case-carburized to produce hard, wear-resistant surfaces over tough, shock-resistant cores that add longer life to bearings and machine, smooth the way for minimum down time and record production.

The smoke and spatter of welding operations make tight closures a *must*. Timken bearings hold shafts concentric with their housings, keep dust and dirt *out*, lubricant *in*. Maintenance, of course, stays *down*.

Timken bearings take all the stresses in stride because they take both radial and thrust loads, or any combination of loads. They roll the load. Friction is virtually eliminated because Timken bearings are designed by geometric law to have true rolling motion. And they're precision manufactured to live up to their design.

Timken bearings help put go and life in your machines—to make better products, make bigger profits. That's BETTER-ness. Specify Timken bearings. They're at the hub of BETTER-ness. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

This symbol on a product means its bearings are the best.

BETTER-ness rolls on **TIMKEN**® tapered roller bearings